# Language Accommodates Privacy Laws

By **Nancy French**
Of the CW Staff

CAMBRIDGE, Mass. — Users faced with rewriting source code to make programs comply with the Privacy Act of 1974 may wish to consider using the high-level Privacy Language and a preprocessor under development here.

These tools allow a user to modify any program written in a conventional language such as Cobol by coding the privacy functions in Privacy Language, running the program through a preprocessor to expand the instructions and then compiling as usual.

Separating the privacy aspects of a program from its functional aspects in this way allows the user to "change and modify the privacy module as the law evolves and develops without ever touching the functional code," Robert Goldberg, who conceived the system, said

Goldberg, who is a lecturer on computer science at Harvard's Aiken Computer Computation Laboratory, contends relatively simple and efficient privacy coding is needed to avoid the type of partial solutions some users are adopting to comply with amendments to the Fair Credit Reporting Act.

"Rather than actually correcting computerized records that have been disputed, some credit bureaus are merely flagging them and maintaining the new information in a separate file — perhaps on 3 in by 5 in. cards," he explained While this fulfills "the language of the law, it works to the disadvantage of the individual whose record is disputed by increasing the turnaround time the credit agency needs to respond to an inquiry "

If a credit agency employee can call up all the information needed for a credit inquiry from a single source such as a CRT screen or a computer printout, the agency can provide a couple of seconds response time on that inquiry he explained.

(Continued on Page 2)

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NEWSPAPER

# Xerox Issues Statement on Phaseout to Users

By **Nancy French**
Of the CW Staff

EL SEGUNDO, Calif. — In response to user pressure, Xerox issued a lengthy statement last week telling customers what they could expect during the phase-out of its computer operations

The firm agreed to extend the cutoff date for guaranteeing to fill orders for add-on equipment and spare parts from Oct. 1 to Dec. 31, but did not budge on its earlier request for all mainframe orders by Oct. 1. Orders received after those dates will be filled only if equipment is available, according to the statement signed by Xerox Corp.'s Data Systems Division President Jack C. Lewis

The firm noted its Model 3010 terminal, manufactured by its subsidiary, Diablo Systems, will be available indefinitely.

The company said it will announce only four more software releases — the D00 release of CP-V late this year, as scheduled, ANS-75 Fortran, the B00 release of Text, and software to enable the IBM 3780 to function as a front-end communications processor under CP-V — all in mid-1976 as promised.

The firm has decided not to release the multiprocessing capability which was to have been provided for the 560 system, nor will it develop Cobol beyond the E05 release dated last July. Both these announcements come as a special disappointment to users who were counting on their 560s and a more extended Cobol for multiprocessing activities scheduled down the road, according to Bill McAlpin, chairman of the Xerox user's group known as "exchange."

## Service Continues

Xerox said it intends to service equipment, including the 9 series, through July 21, 1982, "if contracted to do so We will continue to negotiate maintenance agreements limited only by our ability to serve specific locations, and that applies to both lease and purchase customers," the statement said.

McAlpin said the company's terms are "pretty good under the circumstances."

But some found the answers to the Exchange group questions, prepared at its August meeting here, terse and carefully

(Continued on Page 2)

# Flaw Causes $10 Million Welfare Error

By **Edith Holmes**
Of the CW Staff

WOODLAWN, Md. — In a single day last month a programming error resulted in $10,516,000 in overpayments to Welfare recipients, bringing overpayments in the new federal Welfare program for the nation's aged, blind and disabled to over $403 million in its first 18 months of operation

Last week President Ford asked the Office of Management and Budget to review the matter and to make sure such overspending "won't be done again "

The $10 million in overpayments went to about 15,000 people covered by Supplemental Security Income (SSI), a program initiated Jan. 1, 1974. A number of massive SSI checks, many of them running over $1,000, caused personnel at the Social Security's Bureau of Data Processing here to search for some error

The error was eventually traced to a faulty program instructing an IBM 370/165 and a -168 to issue checks to people as though they had been underpaid for a year, according to a spokesman for the bureau

When asked about the nature of the programming mistake, he responded, "Under certain conditions, some strings of instructions — just a few out of hundreds and thousands of instructions for issuing checks — won't be valid We must have hit some of those conditions." Though designated spokesman for the Social Security Administration's (SSA) DP operation, he said he wasn't close enough to the problem to comment more specifically on what went wrong.

The SSA chased the checks with mailed notices to recipients telling them that they had been overpaid and that SSA would like the money returned, according to Robert P. Bynum, the SSA associate commissioner for program operations, including SSI

"We did have the system under pretty

(Continued on Page 3)

# White House Still Dragging Feet On Appointing EFTS Commission

By **Don Leavitt**
Of the CW Staff

## Analysis

WASHINGTON, D.C. — By the end of August — 10 months after legislation calling for a two-year National Commission on Electronic Funds Transfer was signed by President Ford [CW, Nov. 27] and only two months before its interim report is due — the commission had not yet been named.

That paragraph appeared in *Computerworld* four months ago [CW, May 7]. Only the month, the elapsed time and the time remaining before the first report is due have been changed The situation hasn't.

Thus far, the five commission members supposed to come from the private, nonfinancial public simply have not been named And the commission chairman, expected to be drawn from these "public members," is also unnamed.

As of last Wednesday, a source at the White House press office admitted having had "a lot of calls on it here and there" but added, "We have nothing on it at this time — not even any paperwork, which leads me to believe it's pretty far down the pike yet."

In fact, much of the commission membership is prescribed by law The enabling legislation provided initial funding that would have allowed some staffing to gather data even before the commission is formally convened.

But, the press office explained, naming of a commission staff is usually done by

(Continued on Page 4)

# Info 75 Courts End User

NEW YORK — Designed for end users, Info 75 will stress the applications, rather than the technology, of information systems for an expected crowd of 12,000 next week

The conference, which opens here Monday, Sept. 8, and is scheduled to run through Thursday Sept. 11, will also hold a number of technological sessions for DP managers and others with the backgound to understand them.

But this year's Info is aimed chiefly at showing corporate and DP managers "how they can work together to develop new and useful information systems that will increase efficiency and reduce costs," a spokesman for Clapp & Poliak, Inc. Management, which sponsors the conference, said

More than 300 speakers, panelists and session leaders will address Info's 100 sessions Running concurrently with the conference will be an exposition with 125 exhibitors in 240 booths.

The sessions are organized into four key areas: industrial, functional, DP management and technology and minicomputers in business. These four areas constitute "conferences-within-a-conference," according to the spokesman

For example, there is a conference-within-a-conference for seven major in-

(Continued on Page 4)

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## Result of User Pressure

# Xerox Issues Statement on Phaseout

*(Continued from Page 1)*

worded. Even a close reading leaves many questions still unanswered, one source said.

Throughout, the document emphasized "fulfilling contractual responsibilities," but not a great deal more.

Xerox emphasized that contract questions had to be dealt with "on a case-by-case basis," since lease arrangements varied widely, and warned that a new lease would not necessarily contain the same terms.

The company's answer to the renewal question said only, "upon expiration of an existing lease, customers may execute a new lease with Xerox."

As for upgrading mainframes on existing lease, Xerox said its present policy would not change, indicating such upgrades would depend on availability of equipment and ability to "facilitate" maintenance.

On the conditions under which a customer may cancel ordered but unshipped equipment, Xerox said, again, each case is "unique" and "will be evaluated accordingly." The firm added they have no plans to initiate any more favorable lease-to-purchase terms for present lease customers.

Users were told delivery priority would continue to be based on the date of an order. The firm agreed, however, that if a user wished to place an order but not take delivery for an extended period of time, Xerox would build and invoice the equipment and charge a fee for warehousing and retesting.

As for equipment presently on order, Xerox assured there would be no slippage in delivery, promising to "continue to meet our existing standards of test and integration."

After Xerox inventory is depleted, the firm said it will arrange for users to "acquire spares and products from the firm's subcontractors who manufacture such equipment."

Custom systems such as the Communications Input/Output Controller (CIOP) will continue to be provided with the same "availability" condition planned for add-on products following Dec. 31

### Software Design Requests

Xerox has agreed to continue to process software improvement design requests "for the period of its contractual commitment" which could be "up to seven years on some specific maintenance agreements." It would appear some users would be cut off earlier than others, a source said

As for acquiring rights to Xerox proprietary software, the firm has announced this is "subject to negotiation" and will be handled in the same manner as comparable requests for hardware rights.

Xerox will continue to help customers modify software "subject to availability of skills" and will accept formal contracts for modification and enhancements on the same basis, the document said. Finally, the firm will give the user group's library all software still in the development stages "as is."

Xerox has promised to train users to maintain their own systems to the extent they have the staff to do so.

Xerox agreed to complete and make available documentation for all systems, including the newer 550 and 560 series equipment.

Xerox also agreed to continue to update and correct documentation. But the firm has never supplied nor does it plan to supply users with such performance data as mean time between failure or mean time to repair as a planning aid.

When Xerox documentation runs out, users may reproduce it.

Finally, the firm said it will continue to honor its contractual service commitments in the area of response time and remote assists, for example.

# Tool Accommodates Privacy Laws

*(Continued from Page 1)*

"If, however, the file is flagged as disputed, and the information needed to fulfill a request for information is on hard copy in a remote file room, the credit agency may require as many as seven days to respond.

"This certainly penalizes the individual who has disputed his record and would seem to violate at least the spirit of the law," Goldberg said.

One reason for the delay users have seen in developing file designs that meet the requirements of privacy laws is computer experts traditionally have been more interested in security than privacy, Goldberg said.

The so-called "spook" agencies have developed very successful encryption algorithms and other security measures but "have never really had to confront the disclosure problem," he said.

### Data Manipulation Verbs

Goldberg's Privacy Language consists of data manipulation verbs that enable a user to record disputed data and corrections requested by individuals as provided by the law. The data manipulation verbs include such commands as LOG, GET-comments, STORE-subject-comment and STORE-pers-correction, for example.

The verbs are patterned directly from the language of the law, Goldberg explained. For example, the LOG verb needs "the date, nature and purpose" of a disclosure to create a new LOG record.

Expansion of certain privacy-oriented verbs requires a considerable amount of detailed processing, he said. For example, under current legislation, the STORE-pers-correction verb must be able to search the LOG set for data indicating when erroneous information may have been disseminated to other agencies and then internally invoke TRANSMIT-pers-record, for example, to apprise those agencies of the correction.

DELETE-pers, for example, must not only delete a personal record, it also should be able to delete all LOG records owned by that record that are more than five years old. Under the law, these LOG records must contain data indicating who, outside those with a need to know in the principal user agency, has accessed those records, when; and for what purpose.

Use of a higher level Privacy Language should improve the productivity of designers and programmers who are building personal information systems, Goldberg said

In addition, since the same verbs will always be used to express the same functions, regardless of the programming language or the application, this approach vastly simplifies documentation and maintenance.

The preprocessor that translates Privacy Language verbs into the user's normal programming language statements may be used by a variety of agencies since privacy considerations are largely agency and system independent, he said.

Further, providing the Privacy Language is written properly, it "may be possible" to implement changes in the law by simply altering the preprocessor, "thus providing whatever new expansion is needed for a particular verb," he said. Then, "a common utility program could be used to alter the data base to support the new expansions."

*Goldberg will speak on this subject before members of the Institute of Electrical and Electronics Engineers at their meeting at Washington, D.C.'s Mayflower Hotel on Sept. 9.*

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# Politics, Controversy Put End to Dial-A-Ride System

**By Catherine Arnst**
**Of the CW Staff**

SAN JOSE, Calif. – Political expediency and public controversy here marked the end of a computerized public transportation system whose major fault was that it was too popular.

Dial-a-Ride, a personalized door-to-door rapid transit system serving Santa Clara County, opened Nov. 24, 1974 and closed May 9 because it attracted more riders than it was originally designed to handle. Officials had anticipated that in 18 to 24 months the systems would carry 10,000 passengers per day on 90 buses; instead, within 90 days, it was carrying 7,000 passengers per day on 40 buses.

Service became backlogged and inefficient, the county was saddled with labor disputes and lawsuits, and additional funds were nonexistent. The County Board of Supervisors reacted to these problems by voting to discontinue the service, an action termed a 'political move' by one transit official who felt local politicians didn't give the system a chance.

It took about a year for Lex Systems, Inc. to design Dial-a-Ride for the county. They based it on a similar manual system previously tested in Haddenfield, N.J.

Santa Clara's Dial-a-Ride ran on three leased Four-Phase Systems, Inc. Model 70s. The 240-square-mile county was divided into 18 service areas which were in turn sectioned off into 20 to 30 zones each

When a phone call came in with a request for service, the address was keyed into a particular zone. The computer was programmed to scan the available buses, assign the trip to a bus in the area and calculate the time of pickup, which was passed on to the caller.

Each bus driver would call in after an assigned pickup was made. This information was keyed into the computer, erasing the assignment.

Dial-a-Ride has been tried manually in several cities on a smaller scale, but it is the type of system that "works" better as it gets bigger," according to Dr. Roy Murphy of Lex. With Dial-a-Ride, when the service grows beyond six vehicles, a computer is justified financially, and beyond 10 vehicles, it is justified statistically, Murphy said.

### Reliable System

There were no mechanical problems with Dial-a-Ride such as have plagued the infamous Bay Area Rapid Transit (Bart) system in San Francisco, and Murphy said he has "never worked with a more reliable system."

The problems with Dial-a-Ride were due primarily to the overwhelming demand from the day it started. Phone lines were clogged, with callers waiting hours to get through. This was solved with the addition of more operators and hardware to handle the calls, but there still remained the task of providing pickups for all the riders requesting one There were not enough buses to pick up each passenger promptly, and there was sometimes a several-hour wait instead of the few minutes expected.

When Dial-a-Ride opened, several fixed arterial routes were closed. The protests from displaced riders, who claimed Dial-a-Ride did not adequately serve them, never ceased.

Also, the buses used in Dial-a-Ride were the same buses employed in some of the fixed arterial routes, and these buses were pulled off the personalized system during peak hours on the arterial. Consequently, there was no real door-to-door service provided during peak hours.

### Public Image Suffered

Because the same size buses were used for both the fixed routes and Dial-a-Ride, the service's public image suffered. The large buses often seemd to be empty or nearly empty when used in the personalized service, and the public complained they were underutilized.

These unfilled buses were cost-justified because, rather than sitting idle in a garage as they do in the fixed routes, they were always on the road looking for passengers, argued Frank Lara, transit marketing officer of the County of Santa Clara.

The final blow was a suit brought by the county's eight taxicab companies charging the service was unfair competition in violation of the County Transit District Act. A superior court judge ruled in their favor and ordered the county to buy the taxi companies.

### High Cost

This would have added several million dollars to a system already running at an increasingly larger deficit. A state legislator had already blasted the high cost of Dial-a-Ride – the cost is $4.85 per passenger, as opposed to $.57 per passenger on fixed arterial routes – which was partly financed by state funds.

A study commissioned by the Board of Supervisors concluded that Dial-a-Ride "can work if you're willing to pay the price to make it work." The Board decided the price was already too high and voted to discontinue it.

Lara disagreed with this decision. "It was a political move by the Board of Supervisors. They were getting a lot of heat, but we were getting more," he said.

"We needed more dollars. That's really what killed it," Lara said. "The system costs more per rider than a lot of others, but we must be ready, willing and able to cover these costs."

An official report issued by the Transportation Agency after the demise of Dial-a-Ride concurred with Lara's assessments of the costs. "The price of adequate transit services is high," it said, and added that "the viewpoint that transit should be paid for solely by the so-called 'customer' lingers on."

Lara disagreed: "The public is supportive of the idea of public transporation. We should have gone to the voters long ago." He felt the public would have been more responsive when the energy crisis was in full swing and inflation rates were lower.

"The people in Santa Clara are looking for ways to get out of their cars. They are looking for an attractive, convenient method of public transportation," he said. "But they won't give money until they see an effective system. We didn't have much of a chance to prove that to them."

The system was not operated long enough to judge its effect in reducing the use of cars, Lara said. The consensus in the county was that its greatest effect seemed to be on the elderly, handicapped and low-income groups without access to cars.

"There were a lot of poor people and low-income people who used Dial-a-Ride," Jack Ybarra, chairman of the transportation commission, said. "Nobody really believed there were that many people who really supported Dial-a-Ride simply because they didn't go down to the board chambers to scream and holler."

The official report concluded that "politics, as a part of transit marketing, is typically regarded as a separate arena. It is not. Political accomodation is inextricably bound to technical solutions. This fact was inadequately recognized, and the problem of political passions was dismissed by technicians, professionals and politicians alike."

## *Overpayments Made to 15,000*

# DP Flaw Causes $10.5 Million Welfare Error

*(Continued from Page 1)*

tight control," Bynum explained. "The fact this could hit us in the eye like this will sharpen us really. It was an expensive lesson, but we've learned from it."

But the full lesson may not be learned for some time yet. Unwarranted payments to clients totaling $403,798,830.74 since SSI began is apparently only a partial estimate of how much the new program has cost in overpayments, duplicate payments and payments to ineligible clients. When all have been accounted for, the total could climb as high as $1 billion.

In addition to some programming problems, the DP bureau spokesman noted many of these payments occur because of the difficulties of keeping up-to-date records on each recipient. "Incomes, resources, property, living arrangements, assets are constantly changing in nearly every case," he said. "If a recipient wants to contest the SSA's decision to reduce his payments, that person is entitled to a legal decision on the matter before the problem can be resolved."

"We picked up on much of the overpayment in the program by conducting the required annual redetermination or recheck of the accuracy of the data fields we work with," he added

Another spokesman for the SSA commented that the overpayment figure is really insigificant – amounting to only 3% of the total payments made under SSI since the system began. Thus far, about $82 billion has been funneled into the welfare program serving 4.2 million.

The spokesman added that $57 million had already been recovered by sending out smaller checks in later payments, but noted this means of recovering the funds is limited due to the rights of those covered under the program.

Bynum suggested that the overpayment figure be balanced off against SSI's underpayments, which amount to about $35 million and which headlined many local newspapers during the first few months of the program's operation.

The balancing method has been rejected by several SSI officials as "invalid." "When we discover someone has been underpaid, we have to make it up. We rarely get money back from an overpayment," one said.

Various congressional, outside, state and federal auditors, including the General Accounting Office, are investigating the SSA computer operations and have been for the last few months.

According to a report in the *Washington Star*, John T. Walsh, chairman of a team of auditors from various states that is examining the SSI records in particular, wrote to the head of the Department of Health, Education and Welfare which includes Social Security. In his letter, Walsh said, "Many of the accounting and systems deficiencies which existed in the first six months of the program, existed throughout the following fiscal year [1974-75] and still exist."

Also in the *Star* was the comment that, when Congress was considering SSI, its members were assured the SSA's computer operation, years of DP experience and reputation for being among the most efficiently run federal agencies would make the system work from the word go.

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## Most Marked Growth at Small Sites

# Study Finds DP Starting Salaries Rose 6.8% in '75

**By Catherine Arnst**
Of the CW Staff

NEW YORK – DP starting salaries for 1975 rose an average of 6.8% over last year, according to the findings of a recent survey by the Robert Half Personnel Agencies, Inc.

The largest increase for any job category came for DP managers at small installations, whose starting salaries rose from $14,000 to $16,000 to $15,000 to $20,000, an increase of 16.7%.

Salaries for computer operators at installations of any size, by contrast, did not change at all.

The study, conducted annually, was based on an analysis of position requests received by Robert Half offices throughout the country. The company cautioned there is some difference between starting salaries in cities in different parts of the country, but added that difference generally is not greater than the variance in salaries between a large city and its suburbs.

Job descriptions were broken down according to size of installation – large, medium and small – and the categories included programmers with up to one year of experience, programmer/analysts, lead programmers, system analysts, managing system analysts, operations managers, DP managers and computer operators.

### Discrepancies by Site

The salaries of programmers at large installations rose only 2%, according to the study. At medium-sized shops, salaries increased 4.3% and jumped 10% at small sites.

While the 10% increase at small installations brought those programmer's salary range up to between $10,000 and $12,000, the salary range at large installations was still higher – $12,000 to $13,500 – despite the smaller percentage increase, the survey found.

This rule held for all job categories at small installations – although salary ranges increased more by percentage points than those at medium to large installations, salary levels were lower in terms of dollars.

The average percentage growth for each position was 11.9% for programmer/analysts, 6% for lead programmer (a position listed only for large installations), 6.5% for system analysts, 7.3% for managing system analysts, 8.6% for operations managers and 10.3% for DP managers.

A demand for highly competent employees greater than the available supply was cited as the reason for the overall increase in starting salaries by Bill Kohler, account manager for Robert Half. He called any influence the increased cost of living rate may have had minimal.

"Our company is still getting more orders than applicants, and companies have expanded their fringe benefits and salaries in order to attract competent employees," he said.

Kohler attributed the lack of change in starting salaries for computer operators to the "greater influx of entry-level people" at this position.

# White House Still Dragging Feet On Naming of EFTS Commission

*(Continued from Page 1)*

the head of the commission, so. . .

No one in the presidential Personnel Office was available for comment on the situation. It is unclear at this time if invitations to join the commission have been sent to selected candidates and rejected by them (which seemed to be the situation in April) or if invitations have not gone out at all.

Earlier in the month, the personnel office responded to an appeal to President Ford from Jerome Dreyer, executive vice-president of the Association of Data Processing Service Organizations (Adapso), in which Dreyer urged Ford to complete and activate the commission.

But the White House response was certainly nothing to cheer about.

In his letter – dated June 2 – Dreyer acknowledged there were "many considerations involved in the appointment of persons to important commissions," but told Ford "it is of substantial importance to our nation, and to the world, that the work of [this commission] be begun and completed at the earliest possible time."

He went on to point out Congress' mandate that the commission's work be done in two years and noted "the private sector, and many other aspects of the public sector as well, are not holding up their activities during this period.

Seventy-two days after Dreyer wrote his letter, on August 13, the presidential Personnel Office responded:

"Dear Mr. Dreyer:

"The President has asked me to thank you for your correspondence concerning the appointment of members to the National Commission on Electronic Funds Transfer.

"Your interest in making your views known is most appreciated. We are pleased that you took the time to share your thoughts and I want to assure you that your comments have been noted.

Sincerely,

Douglas P. Bennett
Director"

# Info 75 Designed To Court End User

*(Continued from Page 1)*

dustrial, commercial and service areas: manufacturing, retailing, banking, insurance, hospitals and health care, transportation and public utilities.

Info 75 coverage continues on Page 8.

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# Catamore Files Detailed Counterpoint to IBM Motion

By Molly Upton
Of the CW Staff

PROVIDENCE, R.I. – Catamore Enterprises, Inc.'s attorneys have filed a detailed, blow-by-blow counterpoint to the IBM motion asking the judgment in favor of Catamore be set aside or a new trial be held [CW, Aug. 6].

Claiming IBM's memorandum contained "inconsistencies, false presumptions, inaccuracies, gratuitous editorial comments and inflammatory remarks," the Catamore memorandum supported Judge Raymond J. Pettine's charge to the jury and asked the court to deny IBM's motion.

The Catamore filing said IBM's memorandum included "faulty premises of fact and law, is unsupported by the record of this case and [is] a misapplication of the facts of this case."

On some points, the Catamore filing claimed, cases cited by IBM in its brief were not relevant to the points IBM was making.

In a long list of counterarguments, Catamore's memorandum maintained that the jury's verdict awarding Catamore $11.4 million in its counterclaim was consistent with its verdict for IBM in the amount of $68,453 for unpaid rental.

The dual awards were evidence only that the jury did not find fraud in the inducement of the Machine Services Agreement, Catamore said.

Evidence, both oral and written, supported the jury's verdict and, if anything, was on the conservative side, Catamore contended.

Catamore disputed the IBM claim that the jury's award was derived from duplicative damages and claimed all parties, including Catamore, took great care to delineate those damages that might overlap or be duplicative.

An IBM witness, George Jamieson from Price Waterhouse & Co., stated the total amount of damages, as adjusted by him, was $19 million, Catamore pointed out.

### Duty of Care

Furthermore, Catamore said, the court was correct in instructing the jury that the law imposes a duty of care upon IBM so that it should have warned Catamore of the dangers of converting to a computerized system.

Catamore pointed out the "assignment of a trainee and the failure to warn alone constitute two separate negligent acts or omissions, fully supported by the evidence."

In addition, "IBM's assertion that as a matter of law the software agreements were 'too vague to be enforceable' is not only absurd on the record; it is also unconscionable," Catamore said.

Catamore took IBM to task for implying "that contracts which do not contain terms limiting liability must fail. IBM does business by attempting to limit its obligations under its preprinted form contract for hardware.

"While the vast majority of IBM's software agreements are oral, IBM attempts to avoid these oral contracts by hiding behind the parole evidence rule," Catamore said.

Parole evidence forbids the introduction into evidence of oral agreements when they are ruled to cover the same subject as the written agreements and are intended to be included in the written agreements.

The rule was not applied to the oral agreements for software and services.

"To imply that contracts must have built-in disclaimer clauses in order to be definite enough to be enforceable cuts to the very heart of that time-honored principle" by which the "law presumes that men engage in business in good faith," Catamore said.

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## Attorneys Object To Name-Calling

By Molly Upton
Of the CW Staff

PROVIDENCE, R.I. – Calling comments made by IBM counsel in its motion for a new trial [CW, Aug. 6] "scandalous," attorneys for Catamore Enterprises, Inc. have asked the U.S. District Court here to discipline the IBM lawyers who signed the document.

In addition to taking "appropriate disciplinary action," the court should impose sanctions on IBM counsel to ensure good conduct in the future, Catamore attorneys said in a motion filed with the court.

Among the signers of the IBM motion were IBM chief counsel Nicholas deB. Katzenbach and Thomas Barr, lead attorney from Cravath, Swaine & Moore, which is representing IBM in the U.S. vs. IBM antitrust case.

### Public Relations Purposes

Catamore charged IBM attorneys used the memorandum for public relation purposes. Such action was "an additional instance in a pattern of arrogance and disrespect to this Honorable Court and to its officers," the Catamore document said.

Catamore took issue with IBM's claim that Thomas K. Christo, Catamore's lead attorney, made "unfounded and scurrilous statements" during his final argument.

Catamore also objected to IBM calling Catamore President Robert Catanzaro's projections "pipe dreams."

The use of the terms "unfounded and scurrilous" was "frivolous and scandalous, and an attorney who resorts to such tactics should be disciplined."

Calling Catanzaro's projections "pipe dreams" was "completely unnecessary and demeaning to that man's business acumen," wrote Christo.

Catamore's memorandum said "this kind of allegation that counsel for the defendant in effect misled the court or knowingly lied to the court is reprehensible and should not be tolerated.

"What is obvious from reading" the press reports attached to Christo's affidavit accompanying the Catamore memo "is that the plaintiff's 'memorandum' was in fact nothing more than a device whereby the plaintiff could allay fears of certain institutional investors and the investing public in general about the implications of the jury's verdict in this case on IBM . . . ," the Catamore memorandum stated.

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# Conn. Saves $6.1 Million by Canceling Order for CPU

By Edith Holmes
Of the CW Staff

HARTFORD, Conn. – Sloppy business practices, rather than conflicts of interest, seem to have been behind Connecticut's lease of an IBM 370/168 it didn't need.

When a study revealed the state was wasting about 70% of the capacity of the 168 it had installed, officials realized the second 168, already on order from the manufacturer, was totally unjustified.

The state will save approximately $6.1 million by not leasing the second mainframe from Systems Equipment Lessors, Inc. (SEL) in Greenwich, Conn., according to the consultants who conducted the study. The study by Systems Implementation, Inc. of Columbus, Ohio itself cost $4,647, state officials said.

In an announcement of the actions the state planned to take, Gov. Ella T. Grasso stated no attempt had been made to acquire comparable computing power from a manufacturer other than IBM.

Connecticut leased the two mainframes from the third-party lessor in July 1974 and had since installed one of the machines. A change in administrations early this year prompted questions about the eight-year lease. Charges of conflicts of interest and lack of need led to the study, officials said.

### Interest Transferred

Acting on the recommendations made by the consultants, the state attorney general's office entered into negotiations with SEL and recently signed an agreement transferring Connecticut's interest in the second 168 to the Manufacturers Hanover Trust Co. of New York.

Gov. Grasso has said that, in addition to canceling the contract for the second machine, Connecticut will also incorporate other suggestions made by the consultants to increase the effectiveness and efficiency of the state's DP operations (see accompanying story).

In conducting their study, the consultants determined there are a number of installations in state agencies "that result in the state paying for a considerable amount of unused computer capability."

But, users in the state's central data center and at the University of Connecticut (UConn) were concerned about inadequate response time. It seemed the hardware – two 370/155s – was being fully utilized and demands on the center appeared likely to continue to grow.

Because their central data center was to acquire the two larger mainframes, state officials then moved the two 155s to UConn.

But, the consultants reported, "these machines are also under long-term lease and, as such, represent a continuing obligation of the state. The movement of these machines to the university will clearly provide excessive computer capacity there," they added.

While they found only 30% of the capacity of the one 168 installed is being used, the consultants did say future new applications and additional users justify its acquisition.

# IBM Adds Products To 'Not in New' List

WHITE PLAINS, N.Y. – IBM has added several pieces of equipment to a classification known as "not in new production" since January of this year.

This is actually equipment no longer produced by IBM factories. IBM customers who place orders with their local representatives often are shipped equipment classified in this manner.

What these users receive are rebuilt units under warranty by IBM as if they were new.

They are:

- The 3158 and 3168 processing units for the 370/158 and 370/168; 3330 models 1 and 2 disk; 3333 Model 1 disk; 3830 storage control Model 2; 0129 card data recorder; 2305 Model 1 fixed-head storage; 2835 storage control Model 1; 3713 printer; 3215 console printer/keyboard; 3504 and 3505 card readers; 3525 card punch; 1035 badge reader; and the 5203 printer.
- Also the 360/195 and 370/195 systems, specifically with the following units: 3060 system console; 3080 power unit; 3085 power distribution unit; 3086 coolant distribution unit; and 3195 processing unit.

# Senate Kills Bill to Stop Parent Locator Service

WASHINGTON, D.C. – The Senate has defeated a bill to abolish the Parent Locator Service, a controversial plan that permits the Federal Government to use computerized records to locate parents whose absence has put their children on welfare.

The House had passed a measure to block start-up of the program [CW, Aug. 20]. But as a result of the Senate action, the service has gone into effect.

Established within the Department of Health, Education and Welfare's Social and Rehabilitation Service, the Parent Locator Service has been given authority to use virtually any means necessary to locate delinquent parents.

These methods include access to the files of any federal agency. They may take the form of running magnetic tape records of missing parents' names and Social Security numbers against master tapes in both the Internal Revenue Service and the Social Security Administration to find their last known address and employer.

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## Recommends Future Conn. Policies

# Study Pinpoints 'Questionable' Purchase Procedures

By a CW Staff Writer

HARTFORD, Conn. – Connecticut's "questionable procedures" for acquiring additional computing power included a myopic preference for IBM and a failure to protect against potential conflicts of interest, consultants conducting a study for the state indicated.

A leasing contract which put the state at a severe disadvantage, a lack of state DP personnel and a deficit which could eventually grow to undermine state DP operations were also identified by their findings.

Lessons learned by Connecticut and recommendations posed by their Ohio-based consultants, Systems Implementation, Inc., can prove instructive for other state and local DP operations as well.

The consultants urged the state and any of its agencies acquiring DP equipment to "open their doors" to all vendors and to apply all bidding procedures to leasing companies and potential suppliers of software, system design and the like as well.

They noted vendors should receive notice of the state's intent to procure hardware or software, be given the opportunity to offer proposals, be assured their proposals will receive unbiased consideration and know what the state's needs are and on what bases the contract will be awarded.

### Disclose Interests

To protect against conflicts of interest, the consultants recommended officials involved in procurement decisions be asked to disclose any interests – ownerships, partnerships, stock holdings, consulting relationships – which they or their immediate families have to any suppliers involved in the bidding.

The consultants questioned the kind of leases for the IBM 370/168s which the state chose to sign with Systems Equipment Lessors, Inc. (SEL).

They noted the leases contained such "significant characteristics" as balloon provisions, calling for a rental of $42,862.50 for the first 12 months and a rental of $75,622 for the remaining 84 months of the contract for the first 168; no responsibility on the part of the leasing company for the quality of performance of the equipment; state responsibility for any insurance and taxes; and a cost to SEL of $4.3 million for one machine while the state would pay over $6.8 million on the contract. Also, when the contract expired, SEL was to receive the computer delivered at state expense.

### Hire Competent People

They also suggested the state hire competent people to handle tasks often farmed out to consulting firms.

If the state is not able to compete with private enterprise for the best DP personnel available due to low pay scales, "we recommend the state scales be adjusted," the consultants added.

They stressed the need for specific milestones and progress payments in those instances where consultants are used, noting an instance in which Connecticut contracted for the development of a payroll/personnel system, has paid over $500,000, but has yet received little or no usable output from this expenditure.

### Improve DP Management

The consultants recommended that the state improve the level of its DP management and technical expertise by including a DP manager, a systems programmer and a systems analyst on its staff.

An advisory committee organizing the talents available within local private enterprise and a user committee composed of representatives of those agencies relying on the data center could also provide valuable forums for discussing proposed changes or possible problems, they added.

> *'Officials involved in procurement decisions [should] be asked to disclose any interests . . . they or their immediate families have to any suppliers involved in the bidding.'*

The consultants noted indications that the revolving fund for DP will run a deficit of $200,000 to $300,000 during the current fiscal year. "If neither pricing policy nor projected expenditures for fiscal '76 are changed, the situation will become even worse, with revenues falling short of spending by about $1.3 million," they said.

In addition to recommending the state not lease the second 168, the consultants suggested the center consider selling more processing to state and to outside users, making its prices for such contracting competitive and acquiring some additional state appropriations.

Any profits gained through outside contracting could be used to repay the state subsidy, for programs to maintain the center such as research and marketing and to reduce prices to the state agencies, they noted.

### Consolidate Operations

Finally, the consultants urged state officials to make consolidation of state DP operations their basic objective. They added, however, that special conditions at individual agencies should be taken into account in moving toward the goal of one or two large state data centers.

"To the extent that manual data processing is being used in cases where automatic data processing would be more efficient, the state is losing money by not spending more on DP," the consultants said in their study.

They added, though, that procedures should be recommended to avoid such "common pitfalls" as "using on-line systems where batch processing would do about as well, using teleprocessing where the mails would suffice, buying systems that convert hard copy into computer language and retrieve it as hard copy and where marginal increases in response time are being obtained at horrendous marginal costs."

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**• Info 75** **• Sept. 8-11**

# Sessions to Stress Management, Technology

NEW YORK – Stressing the "critical interface" between DP and the rest of any enterprise, nine management and 17 technology sessions will focus on minimizing the effectiveness of people and equipment at Info 75 here next week.

Three case histories delving into the opportunities and pitfalls of computerized information systems intended to reduce an organization's overall costs will open the conference's management sessions on Monday morning, Sept. 8.

Because an ineffective information system is often the direct result of a lack of planning, one session will be devoted to the five-year-plan approach to building such systems and another to management by objectives as applied to systems development. These will be held on Monday afternoon and Wednesday morning, Sept. 10, respectively.

The conference will place considerable emphasis on the "how tos" of creating a competent information systems staff, including four sessions in its program on this topic.

The first of these sessions will deal with what the universities are doing to train students to develop and manage information systems in business – and what they could be doing. Business executives and university and college faculty members will talk about the often inadequate preparation of graduates for business and industrial information systems careers in a panel discussion.

Following this Wednesday morning session will be two afternoon meetings focusing on how to hire and retain competent information systems personnel and the responsibilities and impact of systems programmers on the DP operation.

Finally, alternatives for maximizing the effectiveness of critical personnel assigned to various DP project areas will be treated in a session held Thursday morning.

Selling top management is a key theme in two sessions: one on achieving approval of information systems proposals and the other on building security into a modern DP center. Held on Tuesday and Thursday mornings, Sept. 9 and 11 respectively, these sessions conclude Info's offerings in the management area.

In keeping with the cost/benefit tone set by the management sessions, conference meetings under the heading "technology" will often focus on the word "trade-off."

A two-session series on system upgrading and replacement will deal with conversion trade-offs and portability considerations, for example.

Similarly, a Thursday afternoon session will be devoted to auditing the DP installation for its cost-effectiveness; and Tuesday morning meetings to the pros and cons of centralization and decentralization and using improved technologies for applications development.

### Data Base Basics

Several of the technology-oriented sessions at Info will deal with data base concepts, systems and management. Selecting a data base management system with all the necessary evaluations and trade-offs will form the subject matter of a Wednesday afternoon session.

In addition, the implications of data base concepts for general management will be discussed by a panel from the point of view of general management on Thursday morning; the security and integrity considerations for data bases will be treated on Tuesday afternoon; and the need for data base administrators to act as interfaces between DP functions and the enterprises they serve will form the basis for a Wednesday morning session.

### Communications

Three sessions will deal with data communications: one Monday morning on the design and operation of data communications and on-line systems; a second that afternoon on the reliability and performance characteristics of data communications and on-line systems; and a third Tuesday morning on the recent developments of data communications and their impact on the DP function.

Also part of Info's technology program are meetings on keyed data Wednesday morning, on the new mass storage systems Thursday morning and on executives' use of interactive graphics terminals that afternoon.

Finally, conference participants will be treated to a Monday morning discussion of the user implications of fourth-generation system architecture.

# Industry, Service, Commercial Areas Focus of Meeting

NEW YORK – Industry sessions here at Info 75 will cover seven major industrial, commercial and service areas: manufacturing, retailing, banking, insurance, hospitals and health care, transportation and public utilities.

### • Manufacturing

A plenary session Monday morning, "How Top Management Satisfies Its Information Needs to Plan and Manage a Complex Company," will introduce this area of interest. It will be followed by two concurrent series of sessions.

Monday afternoon's "A" session will explore the development of the master schedule for accurate predictions of sales and their integration with the corporate plan to forecast production requirements. "Improving Productivity Without Fixed Capital Investment Through Planning and Scheduling," a case study of the computerized logistics system of the Black & Decker Mfg. Co., will be given Tuesday.

On Wednesday, "Planning for the Manufacturing Capacity Needed to Meet Demand," with papers focusing on both short-range and long-range planning, will take place in the morning, followed by discussions in the afternoon on data capture and shop floor control to assure production matches the master schedule.

The final "A" session Thursday morning will be on information systems used to monitor the progress of manufactured goods from the factory to the end user.

Tuesday morning, the "B" series will begin with talks on information technology to control the storage and routing of semi-finished and finished goods in high productivity manufacturing facilities.

Wednesday sessions will include "Information Systems to Improve Maintenance and Control Its Impact on the Production Schedule" in the morning and, in the afternoon, talks on computer use in "Engineering the Job."

The series will finish with "Quality Control for Economic Survival" – a session on automated testing systems for in-process inspection.

### • Retailing

Retailing sessions cover all aspects of the total information system to support executive planning and decision making in the retailing organization. "Forward Planning – Setting Goals – Establishing Strategies and Developing a Supportive Information System," will start the series Monday afternoon.

On Tuesday, discussions on information systems in merchandise management will be held in two parts. In the morning, papers will be presented on a classification structure that will help detect emerging and down-trending businesses and exception reporting of fast-selling and slow-selling styles. Managing hardgoods and staples and big ticket merchandise will be the focus of the afternoon program.

"The Information System in the Retail Operation" and "New Technology in Sales Audit and Credit Systems" will be held consecutively Wednesday morning, and, in the afternoon, distribution and warehouse systems will be covered.

The series will conclude with "Putting It All Together – The Total Information System" Thursday morning.

### • Banking

Seven sessions are included in this section, beginning with talks on the approaches senior bank executives have taken in satisfying the information needs of their organizations.

Tuesday afternoon will feature two concurrent sessions, "Expanded Financial Services for Growth and Greater Profitability" and "The Bay State Computer Center – A Case Study."

Both "Cost Containment and Bank Operations Through Information Technology and Cost Reduction Planning" and "Information Systems in International Banking: A Case Study of Chase Manhattan Bank" are scheduled for Wednesday.

Thursday will be devoted to electronic and financial transfers with meetings on electronic funds transfer systems realities and strategies.

### • Insurance

The insurance sessions will start Tuesday morning with "Profitability Measurement in a Multiple Line Insurance Company – the Problem and Some Systems Designed to Present Profitability Measurements." In the afternoon, problems of and solutions to cost control in a life insurance company will cover manpower and budgeting control and unit costs.

"Planning for the Changing Federal Pension and Insurance Environment" and "Privacy of the Individual's Data in a Life Insurance Company – Short- and Long-Range Systems and Cost/Performance Considerations" will both be held Wednesday morning; discussions on the approaches taken by senior insurance executives to satisfy the information needs of their organizations is scheduled for the afternoon. The Thursday morning session will cover "Impact of On-Line Systems on Insurance Companies."

### • Hospitals and Health Care

Tuesday will be devoted to "Information Systems: Rx for Health Care," an overview of hospitals and health care organizations dealing with health information requirements while viewing such care as a business. On Wednesday, sessions will focus on maximizing information and cost-effectiveness in hospital and health agency operations in the morning and computer-based information systems in the hospital during the afternoon.

"Knowledge Management in the Hospital Library" and large and small information systems in health care will both take place Thursday morning. Afternoon sessions will center on "Auditing the Elusive Measure of Quality in Health Care."

### • Transportation

The first in this series will be "Transportation and Electronic Data Systems" Monday morning. Afternoon talks will cover energy problems in transportation and information systems and means of alleviating them.

A series of three sessions on "Information Systems in Fleet Management" begins Tuesday morning with applications paying special attention to minis.

### • Public Utilities

These sessions will start off with a case study of Consolidated Edison Co. of New York, Inc. – "On-Line Customer Service for Nine Million People – The Need, the Payoffs and the Costs."

Three sessions are scheduled to treat "Resource Management for the Public Utilities." Tuesday morning will cover optimizing facilities and materials in daily operations, the afternoon will continue with long-range planning under uncertain conditions, and on Wednesday the series of meetings in this area will finish with interactive power system analysis.

A second Wednesday morning session has been planned to discuss "The Integrated MIS in a Public Utility – Features and Operating Experience of a Working System."

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## *Conference to Spotlight Minis*

NEW YORK – Recognizing the "new wave" of minicomputers and their applications in both small and large businesses, the sponsors of Info 75 have dedicated several sessions to these devices.

Kicking off this portion of the conference is a Monday afternoon meeting designed to introduce minis to those unfamiliar with them. An evaluation of requirements related to system and machine selection and a talk on the organizational and procedural impact of minicomputer systems will follow a presentation on what minis are and how they're being used in business today.

Tuesday will be devoted to minicomputers in manufacturing and in the office. The morning session will look at these devices as they are used in the apparel industry, the automotive industry and for factory monitoring and reporting systems. A panel discussion in the afternoon will discuss turnkey mini systems designed for office use.

Minis in distribution and minicomputer alternatives in business applications are the scheduled topics for Wednesday morning and afternoon respectively. The rationale and economics of distributed processing in national distribution organizations, the possibilities for multivendor dedicated systems in geographically dispersed distribution facilities and the relationship between distributed processing and telecommunications will be discussed.

Among the alternative uses of minis in business applications to be treated are the on-line, the intelligent terminal remote batch and the small business processor approaches.

Finally, on Thursday morning, there will be a session on the use of minis in banking, including Citibank's conversion from a large system to a minicomputer, a talk on financial display systems and a presentation on a minicomputer-based portfolio system.

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# Editorial

## *Hiding From Reality*

A recent survey confirmed a *Computerworld* finding that the majority of women in DP do not feel they are discriminated against [CW, July 23].

The survey, reported in the August issue of *Datamation*, found that overall, two-thirds of the women questioned feel they have equal status with their colleagues.

The survey of 425 women in the field showed that almost 70% of the women feel they have equal status in the area of pay, and that 66% feel they have equal status when it comes to promotions.

Furthermore, the survey, conducted by Dr. Winifred Asprey and Anne W. Laffan, found that 70% of the women felt they had a chance to hold highly responsible positions at senior technical levels of a company and that 56% felt they had an opportunity to advance to highly responsible positions in upper management.

If only it were true.

Another study, one of the few statistical surveys on employment in the field, painted a picture of discrimination that is obvious, pervasive and widespread.

Not only are women a small minority (20%) of the overall work force in the computer-user areas, compared with industry as a whole where women account for 39% of the work force, but they are systematically paid less than their male counterparts even when performing the same tasks, according to the analysis by Richard E. Weber and Bruce Gilchrist in the July *Communications of the ACM* [CW, Aug. 6].

For some reason, DP has been able to sell itself as a field where there is true equality of opportunity. And it has done such a good job that even the majority of the victims of discrimination are either unaware of it or are misled by the claims.

This probably means that the discrimination in this field is more subtle than in most and that the feeling of action, change and advancement that surrounds computers has blinded people to the actual situation.

Unfortunately this type of discrimination is hard to fight. No one feels there is a problem so it becomes difficult to find solutions.

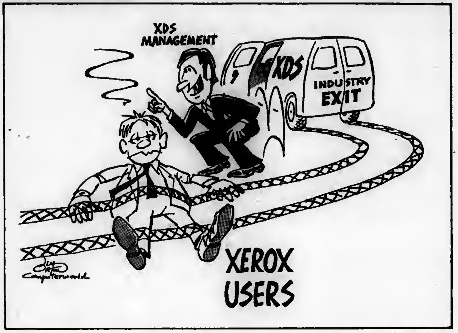
There is a problem, however. It is clear, blatant and will not go away.

All users and manufacturers should review their pay schedules carefully. There can be no justification for unequal pay between men and women who perform the same function. If there are such discrepancies in your shop — and there probably are — they should be changed — fast.

Furthermore, more organizations should begin to pay real attention, rather than lip service, to their claims of equal opportunity for advancement, because the statistics show those claims have been more hot air than substance.

Laffan is correct in her contention that "the computing field holds great potential for women."

But much needs to be done to turn that potential into reality.



*'Just Stay Calm and Don't Move Until We Decide What's Next . . . '*

# Letters to the Editor

## ACM Not Official Participant, Can't Withdraw From IJCAI

It seems to me rather deplorable journalism to write an editorial castigating the Association for Computing Machinery (ACM) for its actions (or lack thereof) on a matter in which it essentially has no involvement. I refer to the Aug. 20 editorial in which it was stated ". . . ACM, as one of the participants in the [International Joint Conference on Artificial Intelligence (IJCAI)], has apparently buckled under to the Soviet demands, violating its own tenets which bar participation in meetings that do not honor the International Council of Scientific Unions standards of scientific interchange."

The actual fact is that ACM has no official involvement or participation (with one minor exception noted below) in the IJCAI. As far as I know, the organizers of past and present IJCAIs constitute an informal group put together to run each meeting. Nobody has requested any official participation from ACM, and so ACM as an organization is not a participant in this conference.

The question of whether we could retroactively impose a policy passed by the ACM Council in May 1975 is thus moot. While it is true that people who are active in ACM are also active in the preparation of IJCAI, this does not create official ACM participation.

Surely you would not limit the right of a person to participate in two activities at the same time and you should not assign one organization the responsibility of activities in the other. That is guilt by association applied in the worst way.

Each person must act as his or her own conscience dictates. I presume individuals who go to this meeting in the light of the current circumstances feel it is appropriate for them to do so.

Since we can't withdraw from something in which we are not a participant, your suggestions to do so are not very constructive, and your statement that ACM is buckling under is rather insulting. In any case, trying to do anything approximately two weeks before the meeting (which is scheduled for Sept. 3-8) is impractical in an organization whose highest governing body, the Council, involves 25 individuals scattered all over the country.

Even if ACM were involved, it would not be practical to take action in a democratic fashion under those circumstances. It is interesting to note that of all the people who have exhibited concern about this meeting for a full year, none of them ever sent me a letter asking ACM to take formal action to disavow the appropriateness of the 1975 IJCAI as a technical meeting.

The exception referred to above involves the financial support to an individual who will give a talk at the IJCAI meeting identified, I believe, as the "ACM Computers and Thought" lecture. This has been done at the two previous IJCAI meetings and is viewed as a service to the attendees and an honor to the speaker.

Following normal procedure, the relevant ACM committee chairman notified the IJCAI chairman about this early in 1974. By the time it was realized early in 1975 ACM had this minor involvement, the Executive Committee decided that it was inappropriate to take formal action to consider undoing a normal event.

The ACM Council was notified of this and nobody proposed anything different. It would be grossly unfair to the individual involved to withdraw his financial support at this time, which is the only conceivable action we could take. That would penalize one innocent person for the actions of a foreign government.

However much any individual may deplore (and I personally do) the political activites surrounding the current IJCAI in the USSR, ACM is not an official participant in IJCAI and therefore cannot withdraw from something it is not in.

Jean E. Sammet
President

Association for Computing Machinery
New York, N.Y.

## IBM 'Watergate' Now Unfolding

The world must be shocked and surprised at the recent announcement that IBM has been contributing to Canadian political parties for several years [CW, Aug. 13].

In the May stockholders' meeting, Frank T. Cary, chairman of the board of IBM, denied IBM had been involved in any such shenanigans. In August he sent a letter to all the stockholders and to the press indicating IBM had been involved in such practices.

Cary has assistants who watch and analyze every word he says, specifically when they are published in the annual meeting reports, to assess whether they are accurate and correct.

Why did it take Cary and all his administrative assistants, lawyers, advisors, etc. so long to finally come out with the fact IBM did support political activity in Canada?

Cary was not unprepared. No corporation with the reputation of IBM is caught unaware.

Why did it take so long for Cary's Watergate to be exposed? How many other secrets does Cary have that may come out due to public pressure in the future?

It might be a great idea to have all of the conversations of the IBM board of directors' meetings recorded on tape. Silence would predominate, since IBM produces the equipment.

Timothy Allen

Summit, N.J.

*(Other letters on Page 12.)*

# Getting Oriented

To find out the future of Eastern Europe, look toward Western Europe. To find out the future of Western Europe, look toward the eastern United States. To find out the future of snow-tire U.S., look toward California.

And to find out the future of California, smog, computers, curious fads and religions, and wall-to-wall people, go to Tokyo! Which a fair parcel of Computerworlders is doing now. The occasion is the second USA-Japan Computer Conference, held at the Tokyo Prince Hotel the week of August 25. The sponsoring outfits are the American Federation of Information Processing Societies and the Information Processing Society of Japan; a sizable bunch of Americans and a horde of Japanese have turned out as expected.

I'm speaking at a private seminar being staged by Dempa Publishing, which puts out our sister paper, *Shukan Computer*. My boss Pat McGovern, Owner of Us All, is also on the program. For both of us, it beats hitchhiking!

Then there are tours of Japan and to Hong Kong, followed by the technical program, assorted social events of course, and technical tours of very considerable interest. There are also preconference tutorials on data security and microcomputers. I look forward particularly to comparing the two opening speakers, one by my former head-to-header, Lew Branscomb of IBM, and the other by Bunichi Oguchi of Nippon Telegraph and Telephone, the Ma Bell of Japan. Both men are deeply research-minded, both belong to intensely paternalistic and monopolistic organizations. But East is East and West is West. Will the twain ever meet? If so, this should be the time!

There is lots of good gossip about Amdahl and Fujitsu, about the formal surrender at Xerox, about whether Mitsubishi can contribute much to the Fujitsu-Hitachi combine. There are new perspectives on character recognition, lots and lots of hardware papers, and the usual dumb goop about artificial intelligence. I've noted some Japanese contributions to library automation and to computer-managed instruction that are new at least to me.

All in all, it seems to be a great show. It doesn't match in size or scope the enormous international triennial in Stockholm last summer, and Irish Coffee is even more expensive – as is everything else! But as an opportunity to do a binational exchange, to show each side how advanced, how vigorous the other one is, it is an eye-opener.

And for good eaters there is one of the world's most exciting cuisines, and perhaps the most beautifully presented. The sushi, the tempura, the teppanyaki – and for the more adventurous, the sashimi and the shabu-shabu. Pat has already beaten me to the occasionally fatal fugu (blowfish), and its not the best or safest season anyhow.

Wonderful, also, for those of us who have already made Japanese friends, here or in Stockholm or Paris, or in Japan, is the opportunity to renew and extend those relationships. Technology is good, food is better, and friendship is great (should have written "best" but I got to thinking about the Kitcho restaurant in Kyoto)!

Herb Grosch

### System Design Unsatisfactory

# Gas Firm's Data Gathering Leaves Many Users Cold

**The Taylor Report**

**By**

**Alan Taylor, CDP**

This week's example of poor computing practice concerns the failure of Boston Gas's revenue program on its IBM 370/135 to use the information it has available. As a result of this failure, new users get an unnecessarily hard-to-read bill, and errors can continue in the system for months without being caught, although all the necessary data to catch them is present.

It is a fact of life for Boston Gas and other utilities that inside meters cannot be read every two months regularly. Techniques are used to provide estimated bills. In the case of Boston Gas, the estimating technique is to break usage down into two parts – a basic usage and a "degree day" usage, that is, the additional amount of gas used by a customer for every day the weather is one degree colder than a preset value.

To get these two parameters, Boston Gas accumulates in the customer's records the total amount of gas used and the number of degree days the service has covered. Nothing is done with these figures, however, until two consecutive readings are made in the June to September period each year. When two such readings are made, it is assumed they represent the basic usage.

With this established, the degree day usage is calculated. Thus, if David Ames had used 37 units of 100-cubic feet between July 11 and Sept. 10 last year, Boston Gas would have been able to determine that his degree day usage since his service was turned on March 1 gave him a parameter of 0.003 per degree day.

Unfortunately, David Ames and the tens of thousands of other Boston Gas users were never told of the importance of the July and September readings.

Boston Gas could have told him in May, when they sent his first bill. There was space for three 70-character lines of message right on the bill, but Boston Gas did not alert Ames to the fact that estimated billing would be based upon real meter readings for this particular period.

### Different History Used

With the failure of this data-gathering system, Boston Gas fell back on another technique with which to estimate David Ames' bills. It used the parameters for the previous occupant of his apartment. Both users, in fact, appear to have the same basic usage, 18.5 units at 100-cubic ft/mo. This more than doubled the degree day parameter, making it .007, instead of what is now known to be the accurate .003.

Again, however, Boston Gas did not tell Ames this – or anything at all about how it was estimating his usage.

They could have done so, of course. The message could have been placed on the face of the July 1974 bill telling him it had decided to use someone else's history on which to estimate his bills. But the gas company didn't do it.

Not only did Boston Gas not tell Ames about this fall-back system of estimating – it did not check whether the history it did have on Ames supported it. It could have done so, because it had actual meter readings on March 1 and May 10, 1974, a period of 2.3 months with over 1,000 degree days. This would have given a usage of round 50 units of 100 cubic feet, if the prior occupant's parameters fitted Ames. But the actual usage was only 39 units of 100-cubic feet, as the billing shows. So it was clear before Boston Gas ever started estimating Ames' usage that the secret parameters they secretly allocated to him were incorrect.

From a processing point of view, the essential error is that Boston Gas concealed its techniques from the gas users. The technique of estimating is not particularly bad, although it needs improvement and, in particular, needs to check for contraindications.

The data-gathering – that is, getting the key meter readings – however, needs to be greatly improved, particularly for the tens of thousands of new users.

The current technique of Boston Gas is simply to send out enclosed folders, asking that users entrust their keys to Boston Gas or tell Boston Gas where its meter reader will find the key hidden (under the mat, perhaps?). Not surprisingly, this leaves many people cold.

Instead, a new-user pamphlet about the importance of getting summer readings in on time, about how to check whether parameters, etc. are correct would, used in conjunction with bill-message warnings, obviate customer dissatisfaction.

The current situation, which only came to light last month when Boston Gas obtained a real reading and then messed up the payment of the appropriate rebate to Ames, makes users feel helpless and resentful, toward both the utility and the computer system. This is a feeling we can well do without, and a little "hot spot" designing by the computer folk at Boston Gas could easily have avoided its occurring at all.

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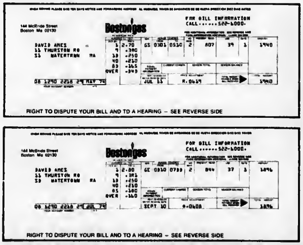

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08 1290 2218 29 MAY 74

JUL 11

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08 1290 2218 29 JUL 74

SEPT 10

RIGHT TO DISPUTE YOUR BILL AND TO A HEARING – SEE REVERSE SIDE

**The two bills above show where the Ames error started. The first bill of May '74 was based on actual usage, while the second was an estimate, based on secret parameters that the gas company had collected from a prior tenant's usage of Ames' apartment. Although there is space on the bills for appropriate warning messagea about the use of these secret parameters and the need for customer assistance in gathering such data, Boston Gas made no attempt to give such messages.**

# Letters to the Editor

## Comments Remind One Struggle Not Yet Won

When I read Thomas Mooshammer's solution to the problem of the underpaid female in DP – less brain, less pay – based on his implication that women have less intelligence [CW, Aug. 20], I was reminded of a former spokesman of his country – same theory, only the subhuman then was the Jew. Mooshammer's comments reminded me that the struggle is far from won.

As one woman DPer who was at first told not to pursue programming (by my male boss) because it was a "technical job requiring logical thinking" and thus not a suitable field for women; then was advised, after advancing through the ranks of programming, that I should "stick with programming because detailed work was women's work" rather than pursuing a job as a systems analyst where one required an ability to "see the broad picture;" then was told my several years of systems analysis experience didn't qualify me for a systems engineering job that required long hours and excessive travel, "too tough for a woman;" then was advised to forget about a management position in DP since "men wouldn't work for women;" then was advised against accepting a marketing position "in the plant" because of the harsh language I would be exposed to, "clearly not an environment for a woman;" then was barred from a national sales/marketing meeting because the president of the company felt I would "disturb the dynamics of the meeting;" now what I hear is that I should consider myself lucky because women and minorities "get all the good jobs even though they are not qualified."

Barbara McLean
Los Angeles, Calif.

## Optimism Moderated By Male Chauvinist

I suppose *Computerworld* should be congratulated for publishing Thomas Mooshammer's attack upon the intelligence of women. It certainly served to moderate any undue optimism some of us have felt concerning the growth of human understanding or elementary fairness in employment in the computer industry.

On a more global scale, it served to remind us the land of Goebbels and Goering is still capable of producing gentlemen with equal insight into the use of scientific methods in sociological research.

At the same time, I wonder whether the editors of CW would have printed a similar comment on a religious, racial or ethnic subgroup in the industry. The fact that the editors saw fit to treat this letter as a joke is, in itself, the strongest comment they could have made on the treatment of women by the computer industry.

John Morris
Rome, N.Y.

## Stepping Out of Line

As an inferior being, I hesitated to step out of line and respond to the feeble mutterings of Mr. Continental European himself, Thomas Mooshammer [CW, Aug. 20. However, my fighter's instinct (I undoubtedly have confused genes) rose to the fore to voice protest.

Goodness me – could it be that all these years in DP nobody has realized I must be less intelligent than all those around me, mostly men?

Perhaps I should resign, stay home and raise a tribe of baby boys.

Eileen Yardi
Goleta, Calif.

## More Help, Please

The letter from Eric Weiss in the July 16 issue expressed the opinion that draft 12 of the PL/I standard is too abstract. Indeed it is – for the average PL/I programmer. However, the standard is not the programming language manual or a training document for an application programmer.

Weiss made the valid point that standards should be understandable and precise. The proposed standard was cited as being incomprehensible unless one first learns the special metalanguage, almost without reference to any prior knowledge of PL/I.

Unfortunately, Weiss did not identify who the reader of a standard should be. The primary audience should be the implementor and the various collections of PL/I experts in such places as the Share PL/I project. If the standard is also readable by the general public, it may be better, as long as ambiguity does not creep in to provide readability.

A few hours (or days) spent on the first chapter of the standard will clarify the metalanguage to any experienced PL/I user. Parts of the standard are particularly useful and relatively easy to read.

I hope someone can write a layman's introduction to standard PL/I for a more general audience. However, the need for such a book should not detract from the beauty of the definition of PL/I as one tree.

Wayne Compton
Dhahran, Saudi Arabia

## PL/I Not Unusual

In my letter I objected to the proposed standard for PL/I because it was stated in such an abstract and algorithmic fashion as to be virtually incomprehensible.

In commenting on my letter, T.M. O'Leary and Dennis R. Allison [CW, Aug. 13] took the position that the basic issue is whether a programming language standard should be addressed to the implementor of the language compiler or the user of the language, the implication being that the implementor could understand the standard as proposed, whereas the user could not.

In my view, this is not the issue. Everyone will agree it would be ideal if a standard could be made clear and precise to everyone concerned. Therefore, the issue is whether it is possible to write a programming language standard clearly and precisely in a language and in a form which is understandable without resorting to an abstract and specially created metalanguage.

Certainly the committee members did not feel they were capable of clear and precise expression of the standard in English. I consider this to be an admission of inadequacy on their part and the appropriate action by the computing community is to reject the standard as incomprehensible and to charge and challenge the committee to produce a comprehensible one.

The creation of standards and their acceptance is a matter of significance to all of us. This standard, if adopted, will harm the general acceptance of PL/I and, as a precedent, will harm future language standardization efforts and standards.

Since the public comment period has ended for the draft standard [CW, Aug. 20], further public discussion may be academic. The Ansi X3 committee will consider the comments it has received, act on them as seems appropriate and prepare a final standards document for the approval cycle.

Consequently, the only actions open to those who might oppose the standard in this form is to convince their representatives on the standards approval bodies that approval should be withheld. Again, I urge those concerned to do so.

Eric A. Weiss
St. Davids, Pa.

## Simplicity the Issue

The response to my request for information on the Cobol Report Writer [CW, June 18] has been highly stimulating.

The many informative letters printed in *Computerworld* have greatly broadened my outlook on the subject. My thanks to all those who have shared their thoughts on the topic.

Informative as these comments have been, I still plan to explore the Report Writer further. To this end, I would like to solicit detailed comments from programmers who are interested in Report Writer and who want to see the features improved. These should be addressed to me at: 1225 Sussex, No. 401, Montreal, Quebec, H3H 2A2, Canada.

My ultimate goal, should time and resources permit, is to compile and distribute a small handbook of Report Writer programming tips.

All comments are welcome, be they experiences, tips, techniques, pitfalls or what have you.

William B. Simmons
Montreal, Quebec

## Not at All Astounding

The Aug. 13 issue contained yet another "astounding" software innovation by IBM. The announcement was entitled "IBM On-Line Payroll System Uses Two 3270s."

I wonder, what could possibly be the reason for anyone publicizing an on-line system, performing *one* function, requiring 150K and capable of handling only two terminals?

Long ago we provided such software for all IBM systems in no more than 49% the core requirements. In addition, the same core allocation would include 10 times the terminals, 3270 mapping, remote and local, full data base techniques, etc.

I don't question IBM's reason for publicizing any software they might evolve. However, since CW is the most widely circulated source of DP technology, I feel it would be its responsibility to notify its readers of other "popular packages" with a "packaged warranty."

Paul D. Doolan
Systems Engineer
Cincom Systems, Inc.
Los Angeles, Calif.

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| 370/125 | ✓ | | | | |
| 370/135 | ✓ | ✓ | | | |
| 370/145 | ✓ | ✓ | ✓ | | |
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# 'Scert 76' Clocks Workloads, Job Mixes, Hardware

**By Don Leavitt**
**Of the CW Staff**

ROCKVILLE, Md. – The Scert 76 package now available from Comress enables users to simulate and, therefore, evaluate proposed system acquisitions, modifications to current configurations and anticipated changes in workloads for their systems.

Scert 76 produces cost/performance projections for any workload on any hardware software configuration, the vendor claimed. Users would find the projections useful in the areas of feasibility analysis, hardware selection, software selection and system design optimization, a spokesman suggested.

Implementation planning, configuration optimization and workload growth analysis could also benefit from Scert-based studies, he said.

The update is said to include support for automatic modeling, along with a versatile simulation language and a built-in library of performance factors. The standardized reports normally provided can be extended to include user-defined formats.

Scert 76 is organized into six modular subsystems. The 90K Scribe input management system backs initial organization of all input data on a presimulation library of workload models – generated manually or automatically – and hardware configuration models.

Scribe also includes a factor library, a separate data base of hardware and software performance specifications. A systems-oriented language aids users in the manual definition of workload models, including model validation.

Working with job accounting data such as IBM's SMF output, the Scamp automatic modeling subsystem generates simulation-ready models of a user's workload and passes them to the presimulation library. It also generates analytical data describing the workload.

Data gathered by a hardware monitor can be input to Scamp at the user's option to provide "live" information leading to more accurate models, Comress noted.

The Score throughput analysis subsystem – in essence, the old Scert package – provides two separate simulation capabilities. The first is a discrete workload scheduling simulator that portrays the progress of any workload from input queue through execution to completion.

The Score algorithms are said to provide representations of almost any operating environment, including multiprogramming, multiprocessing, discrete real-time, direct access mapping, time-sharing, paging, virtual and hierarchical situations.

A statistical technique also available under Score is useful for communications environments including queue-point analysis, resource utilization and expected response time throughout the communications net, Comress added.

A mix analysis subsystem called Scale is described by Comress as a new concept in performance simulation. It is said to use models created under Score to provide a detailed analysis of any number of programs running under a fixed environment, pinpointing contention problems and optimizing job mixes.

The Scout reports management subsystem controls the postsimulation library and production of standard and user-defined reports.

A data base design analysis subsystem originally developed to work with IBM's IMS, Scims is currently being extended to work with most of the generalized data base systems on the market and is not yet available.

### Written In Cobol

Much of Scert 76 is written in Cobol so it can be used on a range of CPUs, including IBM 360s and 370s, Univac 1100s and Series 70s, or NCR Century 200s.

Although Scims (the now delayed data base analysis subsystem) and Score require 150K or more memory, the smaller modules of the system can be run on any user machine with results moved to a big system when it is available.

Scert 76 is available now for $28,000 for a one-year term, $38,000 for two years or $58,000 for three. Training, field support and updates are included in the cost, Comress said from Two Research Court, 20850.

# VCI Enhances Two Packages

CHERRY HILL, N.J. – IBM DOS and DOS/VS installations can now consider a series of enhancements to two packages from Value Computing, Inc. (VCI).

Both System I – for job-accounting and hardware-performance reporting – and Comput-a-charge – for hardware utilization and accounting – have been improved, the vendor said.

Included in the modifications for the DOS shops are a periodic report program, an expanded daily job activity listing, a daily shift summary and an expanded daily shift report.

The periodic report program provides on a weekly, monthly, quarterly and year-to-date basis, and in graphic format, allocation times for "pooled" devices – peripherals which may be shared by and attached to more than one computer.

The daily job activity report has been expanded to include both partition identifications and number of phases processed, VCI said.

A daily shift summary has been added to provide upper management-level information including prior week and month daily averages for such things as runtimes, number of jobs handled and idle times, by shift.

The daily shift report provides an overview of a full day's production and an analysis of each shift's operations. This report has been expanded to break out jobs into as many as eight categories, such as production work, tests, reruns and abnormal terminations, and to show number of jobs, elapsed time and percentage by shift.

Current users will be provided the updated versions free; the packages are available to new users for $5,500 (for System I) and $7,500 (for Comput-a-charge).

VCI is at 300 VCI Building, West Marlton Pike, 08034.

# Multiuser/Multithread Option Now Available for System 2000

AUSTIN, Texas – IBM OS- and OS/VS-1-oriented users of the System 2000 data base management system can now add flexibility to their environments with a multiuser/multithread capability just released by the System 2000 vendor, MRI Systems Corp.

The multithread feature works in conjunction with the multiuser capability and is designed to support installations where teleprocessing or batch demand rates exceed the throughput capabilities of the standard single-thread system, MRI said.

The multithread feature queues transaction input and user output and controls the concurrent processing or multiple System 2000 updates and retrievals, the company explained.

The number of threads is user-controlled and is based on demand rate, core availability and peripheral storage considerations. Currently the feature can support 16 users in nine concurrent processing threads, MRI said.

The primary design objective of System 2000 multiuser with multithread is optimal utilization of resources, the most critical resource being time. System 2000 creates minimum control program overhead and facilitates control of sharable resources, including those involving external devices, user tasks or sharable System 2000 resources, the company said.

Safeguards against deadlocks – which might occur if multiple concurrent users attempt to update the same data element – are built into the multiuser/multithread logic.

The number of threads, users, buffers, shared work files and concurrent data bases to be handled by a given system generation is established at initialization time. If the multithread feature is not installed at a site, the multiuser capability operates in a single-thread environment.

The multiuser/multithread feature is currently available for IBM 360/370 hardware under OS/MFT, OS/MVT and OS/VS1. It costs $20,000 in addition to the $30,000 charged for the basic System 2000 package itself.

MRI can be reached through P.O. Box 9968, 78766.

# Data Listed, Cross-Referenced

NEW YORK – The Automatic Data Dictionary from Base Information Systems, Inc. simplifies control and maintenance of programs and data elements used in an installation's systems as well as maintenance and updating of associated documentation.

Using programs written in "virtually any Assembler or higher level language" as input, the dictionary is capable of generating a range of Indexes and thesauri at the user's option.

The output cross-references programs and data in nearly any way an installation might find useful, Base said.

A user can determine, for example, what modules an entire application system contains or – by contrast – what systems use a given module. The dictionary can also show what systems or what modules use a given data element.

Other output possibilities would indicate what files are used in a system and what the specifications of a given file are. The variety of output should ensure users can anticipate the effect a change in a data element, a file or a module might have throughout an installation.

The software is both machine- and language-independent and can be adapted by Base to function in various hardware and software environments, the vendor claimed.

Currently installed on both IBM 360 and 370 CPUs under DOS, the dictionary utilizes 80K bytes of main storage, four tapes and a disk on the 30, Base said.

Purchase price is from $10,000 to $15,000, depending on options selected, and the package is currently available in object form from Base at Suite 1850, 380 Madison Ave., 10017.

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# 'DOS Jars' Enhanced to Include Links To Accounting Records From Power/VS

McLEAN, Va. – Managers of IBM DOS sites and their end users can gain insights into how their system is working – and what the work is costing – with the latest version of the DOS Job Accounting Report System (DOS Jars II) from Johnson Systems, Inc.

An enhanced version of the original Johnson Systems' package that utilized data collected by the Job Accounting module of DOS by IBM's Power, Universal Software's DOS/Asap or Software Design, Inc.'s Grasp, DOS Jars II now also interfaces with the event-oriented accounting file introduced by IBM with Power/VS.

Paging rates by job, program, partition "and even time of day" will be available to users through this newest interface. So will job turnaround statistics, measurement of I/O queue times, remote job entry line usage and utilization trend analysis for operations management, Johnson said.

Other enhancements in DOS Jars II include support for debit and credit entries, a budget control feature, selection and rejection of accounting records based on user-defined criteria and the ability to bill different jobs and job classes using different rate algorithms.

Version II also includes more than 50 new computations to determine such things as average CPU time, average elapsed time and a range of I/O indexes which are available for display on user-designed reports.

With the capabilities now in DOS Jars II, users are said to have better cost control logic than available previously and good support to evaluate software and hardware changes.

Specific application areas in which DOS Jars II can provide effective cost control and evaluation of hardware/software changes include, in addition to job accounting, budget control, resource utilization analysis, throughput analysis and job scheduling, a Johnson source suggested.

DOS Jars II can be run under DOS and must be under DOS/VS in order to utilize the Power/VS interface. Since the package generally uses preexisting data collection routines, the only storage requirements it has are during data reduction and reporting steps, and those are minimal, the vendor said.

DOS Jars II is available for $3,000. The Power/VS Interface costs an additional $1,000. Johnson Systems is at the Grant Building, Westgate Research Park, 22101.

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## NCI Upgrades Data Base Utility

ATLANTA — Users of Cincom Systems' Total data base management system will find more capabilties to support their data base operations in an updated version of the Total Utility Maintenance System (Tums) now available from National Computing Industries (NCI).

With Tums Version 3, users can operate in batch or multiple-step processing mode. The utility will consecutively process any number of functions on as many data sets within a data base as desired in a single pass, NCI claimed.

Tums 3 prints a job-accounting report at the end of each job step. The report shows the date; start, stop and elapsed time; return code for OS users; and counts of good, error and total records.

For DOS users, Tums is said to be capable of processing any number of blocked or unblocked input or output tape files in sequence without rewinding at end-of-file markers. This allows the user to process multifile volumes, NCI noted.

The series of potential error messages generated by Tums 3 is more extensive than with prior versions of the utility. There are now more than 100 such messages, but the routines that produce them require only 2K bytes of memory, a spokesman added.

Tums 3 is said to support all current versions of Total for both DOS and OS installations. The user's version of Total is now a parameter in the CALL to Tums and, since it is user-accessible, installations operating with two versions of Total gain, in effect, two utility packages in one, NCI said.

Purchase price of Tums 3 is $3,450, the vendor said from 6075 Roswell Road, 30328.

# 'Safeguard II' Eases Security Burden

ALBANY, N.Y. – IBM 360/370 users working under any of the current operating system environments may find data encryption/decryption less of a system burden than before with the Safeguard II package now available from Computer Linguistics, Inc. (CLI).

Safeguard II is a significant extension over its predecessor because its code is both reentrant and relocatable, CLI said. Thus a single copy of the program logic may be resident and shared by multiple users simultaneously.

Both the new and the old Safeguard packages utilize nonlinear encryption algorithms, and knowledge of the specific encrypting key is required. Even detailed knowledge of Safeguard's logic and an accurate picture of the encrypted text is not enough to break the cipher.

Safeguard II, like its predecessor, utilizes a 16-character key (of printing or nonprinting characters) to control the encryption/decryption process. Pseudorandom numbers are generated from this key under control of the system's basic algorithm and these, in turn, create the encrypted text or convert coded text into clear data.

All data types and full or partial fields and records may be processed, CLI said.

Safeguard routines are written in Assembler and can operate on either IBM 360s or 370s, independent of the operating system in use. Thus a single package will function under DOS, OS, TSO, VS1, VS2, CMS, CICS and IMS, a spokesman claimed.

Safeguard II requires about 1,000 bytes of main memory and the overhead imposed by the encryption/decryption process is said to be about 550 nsec/char. on a 370/158.

Safeguard II is licensed for use on a specific CPU and is distributed in object code for a one-time fee of $650. Source code is available for $950, CLI said from 24 Aviation Road, Computer Park, 12205.

[illegible]

THE WORD IS GETTING AROUND.

RAYTHEON DATA SYSTEMS RAYTHEON

# 'Panda 3' Takes Over Disk Chores

OAK BROOK, Ill. – IBM OS and OS/VS users are relieved of the need to analyze and then act on reports of disk-oriented data set usage with Version 3 of Panda, the disk analysis and data set management package available from Pansophic Systema, Inc.

The older Panda was a "superlist" volume table of contents (VTOC) utility, in the vendor's words, but Version 3 now performs many of the chores its reports show are needed.

The user has override capabilities, however, for situations where an otherwise reasonable housekeeping action might be inappropriate.

Panda 3 will now scratch or uncatalog any data sets that have run past their retention cycles or do not conform to user-defined data set naming conventions.

The latest Panda will check partitioned data sets (PDS) to see if compression is needed and, if it is, will proceed to perform the compression. The system will bypass those PDS that don't need to be compressed, the spokesman emphasized.

For protection against system malfunctions while compression is underway, Panda 3 temporarily copies each PDS to be compressed, releasing the copy only after the compression has been successfully completed, he added.

As part of its track map function, Panda 3 informs the user of inaccurate Format 5 labels and utilizes operating system software to reclaim the space.

In addition to the previously available disk use reports by user, track and volume, an operator can specify multiple volumes to be put onto one report.

Other features of the Panda update include support for the latest IBM OS/VS release and for the IBM 3340 data module, as well as Model DSCB support.

On a perpetual license, Panda 3 is available for $2,400.

Pansophic is at 709 Enterprise Drive, 60521.

## 8080-Based Systems Gain Multitask 'Exec'

PONTIAC, Mich. – Tri-Systems Engineering Co. has a multitask real-time executive program for Intel 8080-based microcomputer systems.

The executive, called MTE-80, is said to provide for easy implementation of complex sequencing and scheduling problems, a capability previously found only on larger minicomputers and up.

Features of the $850 MTE-80 include interrupt I/O for standard peripherals, a set of exec functions and a feature to allow time-sharing between active tasks, Tri-Systems said from 2312 Greenlawn Ave., 48053.

# Telenet Lays Question of VAN Regulation at FCC's Door

By Ronald A. Frank

Of the CW Staff

WASHINGTON, D.C. – Now that Telenet has begun operation of its packet-switched common carrier service, users can make some evaluations of the cost of this type of "value-added network" (VAN).

Although Telenet is the first regulated VAN, Tymshare has operated a similar service for some time on a nonregulated basis. The major difference in the two approaches is that Telenet customers pay their charges under a tariff filed with the Federal Communications Commission (FCC); Tymshare users pay their rates under a contract signed with the company.

## Analysis

The FCC has been considering whether VANs should be regulated for some time, but has not yet arrived at a decision. Telenet assumed from the start it should be a regulated carrier and made the necessary applications to the FCC.

Tymshare, realizing it might be required to file a tariff to operate its packet-switched service, has said it would do so if ordered.

But the effects of carrier vs. noncarrier status on the user have never been clear. Some information is now available from Scientific Time Sharing Corp. (STSC), the first Telenet user [CW, Aug. 27]. In addition to being the first to operate under the Telenet tariff, STSC has also used the Tymnet service. The comparisons are interesting.

Tymnet uses 1960's technology, while Telenet uses more modern equipment, according to John Myrna, STSC communications manager. He described the Tymnet facilities as very slow and too expensive for use on his APL Plus service.

STSC was paying $6.50/hour to Tymshare to operate on the Tymnet network. But the company has recently restructured its rates, which Myrna thinks may have been prompted by the advent of Telenet service.

In any case, Tymnet rates are now similar to AT&T high/low density charges. This means rates are lower in high-population areas and higher in low-population areas.

Under the restructured Tymnet rates, Myrna said he would have to pay about $4.50/hour of connect time. But this is still double the rate of $2.28 which he estimates it is costing STSC on the Telenet system.

A Tymshare spokesman said his com-

(Continued on Page 16)

## First Telenet Tariff Based on Data Quantity

WASHINGTON, D.C. – The first tariff filed by Telenet Communications Corp. gives users a schedule of rates that is based on the amount of data transmitted instead of a per-mile or distance-sensitive rate.

The basic charge is 60 cents per kilopacket, or 1,024 bits of information, transmitted by the user. In addition, there are various classes of access points or ports at which the user enters the Telenet network. These access ports can be either dial-up or dedicated, and the charges are based on the speed of service used.

Public dial-in ports are available at one rate from 110- to 300 bit/sec at $1.40/hour in high-density areas, which include the seven initial cities being served. This rate applies for the first 1,400 hours, after which it drops to 90 cent/hour.

Private dial ports are available at speeds from 110- to 4,800 bit/sec and range from $100- to $400/mo in the initial cities served.

Up to 300 bit/sec, the rate is $100 plus a one-time installation charge of $200. The private dial ports "are available . . . for the exclusive use of a particular customer," Telenet said.

Leased channel ports are available at speeds from 50 bit/sec to 56 kbit/sec at rates ranging from $75- to $200/mo plus an installation charge. These access channels generally cost the same as existing Bell or other rates under DDS or private line services.

Users who have leased channel or private dial ports also pay a minimum monthly multiple connection charge (based on 50 connections) of $200. This rate is determined by the number of peak simultaneous connections through the port each month.

A Telenet access controller installed at the user's site costs $400/mo plus an installation fee of $600. In addition, the user pays a monthly charge for an access port to the controller based on speed from 50- to 1,200 bit/sec. This ranges from $25- to $50/mo.

Initial cities served by Telenet are Boston, New York, Washington, D.C., Chicago, Dallas, Los Angeles and San Francisco. The carrier is at 1666 K St. N.W., 20006.

# Mailgrams From Users' Tapes Speed Messages

MIDDLETOWN, Va. – Computer-originated Mailgrams are being used for a variety of business transactions such as collection of delinquent accounts, corporate announcements, new product announcements, price changes, product recalls, name changes and moves, sales promotion, invitations to meetings, shipping schedule changes and proxy solicitation.

Major users of computer-originated Mailgrams include Shell Oil, Phillips Petroleum, Master Charge, BankAmericard, Publishers Clearing House and National Aviation Underwriters.

Computer-originated Mailgrams can be sent in three ways:

- From a company's computer or key-to-disk system that is equipped with a special program and a communications controller.
- From 27 special Western Union offices which accept bulk messages on computer tape produced either by a company's computer or key-to-disk system.
- From over 100 computer service bureaus which produce computer tapes from message material and address lists provided by a company for acceptance at one of the Western Union transmission centers.

Companies can prepare bulk messages on their own computers, on the key-to-disk sysems of such manufacturers as Inforex, Mohawk, Singer, Sycor and Datapoint or on a Datatype optical scanner for direct transmission.

The key requirements are that they be equipped with a communications controller for transmitting a binary synchronous mode and that they produce a computer tape in Mailgram format acceptable to the Infomaster Mailgram program. Western Union offers the software package for this purpose free of charge.

This software program enables the user to produce a tape which can be read by the Mailgram processing program. What the program does is check the format of messages and addresses, labels and organization of files and check the arrangement of files where more than one file is contained on a tape.

At the same time, it generates the necessary control information to activate the Infomaster switch for journaling, queuing, routing and transmission.

The Mailgram system will accept input data on 9-track, 800- or 1,600 bit/in. tape in Ebcdic, Ascii or Ecdic.

### Three Alternatives

With the program, companies can prepare a formatted tape or data file (on- or off-line) on their mainframe or key-to-disk system, then dial up the Infomaster Center here and transmit all the necessary information over the dial-up phone network.

A second alternative is for companies to send computer-originated Mailgrams by delivering or shipping a tape containing text material and their addresses to one of Western Union's 27 transmission centers which operate 24 hours a day, seven days a week.

At these acceptance points, a Digital Equipment Corp. PDP-8E equipped with two Iomec tape drives transmits each tape over 2,400 bit/sec private lines to the

(Continued on Page 16)

## McNitt to Keynote TCA Meet

WEST COVINA, Calif. – "Telecommunications – Beacon to Bits" will be the theme of the 13th annual conference and exposition of the Tele-Communications Association (TCA) in San Diego Sept. 23-26.

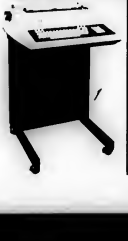
Keynote speaker will be Gen. James R. McNitt, president of ITT World Communications, Inc.

Six workshops slated for the conference will include a presentation for data communications administrators, a nuts and bolts description of how data is transmitted over communications lines, a discussion on the utilization of the domestic specialized carriers, a seminar on "Intelligent Terminals in Telecommunications" and a session titled "Trends in Regulations."

The "Trends in Regulations" session will include a discussion of the types of telecommunication regulatory trends that affect costs. Panel members will be Bernard Strasburg, retired chairman of the Federal Communications Commission's Common Carrier Bureau; Gerald Hellerman, special financial advisor to the U.S. Senate Subcommittee on Antitrust and Monopoly; Tom Keller, general counsel of the U.S. Office of Telecommunications Policies; and Ernest Garfield, commissioner of the Arizona Corporation Commission.

About 100 companies are expected to exhibit their products. Information on the conference is available from TCA 1975 Conference, 424 S. Pima Ave., 91790.

Talk to us about Terminals



(left) AJ 830, the new 30 cps impact printer terminal which features quality and reliability.

(below) AJ 841, the rugged Selectronic™ printer terminal. A cost effective replacement for the IBM 2741.

(right) AJ 230, a mobile acoustic Teletype terminal. (Also available in auto-answer and TWX/DDD versions).

(below) AJ 630, a 30 cps quiet non-impact printer terminal with 140 character print line. (APL is an option).

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# Mailgrams From Users' Tapes Speed Business Messages

*(Continued from Page 15)*

Infomaster center.

A third alternative is for companies to use the services of a computer service bureau for the preparation of the tapes. Over 100 service bureaus have been certified for this purpose.

Service bureaus will keypunch material from raw data or produce a Mailgram-formatted tape from an original name and address tape.

Provision has also been made to generate a magnetic tape in a format acceptable to the processing program from customer data on punched cards. Such card input must be in the correct format for processing by the Western Union card-to-tape program, written in Cobol to allow use on a broad range of mainframe configurations.

The card-to-tape program is available without charge for customer use, as are compatible instruction manuals for either customer tape or punched card input formats.

### Interface Receiver

Enroute to the serving post office nearest the addressee, messages go through the Infomaster center where Mailgrams are received on another PDP-8E acting as an interface receiver.

The tape is then entered off-line into a Univac 1108 which performs a preprocessing function, verifying Zip Codes and format, creating a message queuing tape for transmission and printing out billing information for the transaction.

The tape generated from this preprocessing is then fed into a second Univac 1108 which automatically routes and delivers each Mailgram message by store-and-forward techniques based on Zip Codes to the post office nearest the addressee. All Mailgrams on a computer tape are sent out simultaneously.

At the output side are 121 serving post offices. These are classified according to light, medium or heavy traffic volume.

Forty heavy-volume offices are served by dedicated circuits from Infomaster, operating at 2,400 bit/sec. These circuits connect, through PDP-11 processors operating as controllers, to a minimum of two Data Products 2310 line printers, each capable of processing 800 messages an hour.

Low- and medium-volume post offices are linked to Infomaster by dedicated 110 bit/sec lines feeding 100 word/min receive-only teleprinters.

# Communications Courses Offered

NEWTON, Mass. – Planning and implementing effective data communications systems and advanced teleprocessing systems analysis and design will be the main themes of two seminars being offered this fall.

The courses, sponsored by The Conference Company, were prepared by ICC Institute and Dr. Dixon Doll, a leading teleprocessing consultant. They will be held in several cities between September and December.

Data Communications Course No. 1010 is a two-day seminar intended to provide attendees with a comprehensive exposure to the terminology, economic aspects and functional characteristics of contemporary data communications devices, techniques and systems.

The faculty, led by Doll, will examine the latest communication developments, including Synchronous Data Link Control (SDLC), the principles of operation and prices for Dataphone Digital Service (DDS), HiD-LoD and the impact of satellite and specialized carriers.

Course No. 1020 is designed for professionals who want an in-depth familiarity with the techniques for planning, designing and managing cost-effective commercial data communications networks. This seminar assumes a degree of experience on the part of attendees.

One particular feature of Course No. 1020 is the opportunity for attendees to present their organization's problems for study and discussion by the instructors and class members.

The three-day course covers all practical aspects of data network planning analysis and design quantitatively. It considers both on-line and batch-oriented nets using dial-up and leased lines, as well as multiplexers and concentrators.

The registration fee for Course No. 1010 is $350 and $450 for Course No. 1020.

Further information is available from The Conference Company at 797 Washington St., 02160.

# VAN Regulation Issue Left at Door of FCC

*(Continued from Page 15)*

pany is studying the initial tariff filed by Telenet. "We intend to be competitive with the Telenet rates," he said, but specific comparison cannot be made until Tymshare has had a chance to become familiar with the Telenet rate structure.

The issue of whether packet-switched services should be regulated is before the FCC as part of Docket 20097, titled "Regulatory Policies Concerning Resale and Shared Use of Common Services and Facilities."

The VANs use conventional lines from AT&T and others and add "value" to these facilities. In the case of packet-switched services, this added value is made up of software that rearranges a customer's data for more efficient transmission over the communications lines.

Tymshare believes this is simply the sharing of common facilities among a group of users. Telenet thinks this is a service that should be regulated and provided by a common carrier.

Probably a third option would be to allow both situations to exist, as is now the case with Telenet and Tymshare.

It is not clear yet which method provides the communications user with the best service, under the most stable conditions and at the lowest rates. That is an answer that the FCC will have to determine.

Current estimates are that the commission will make a ruling sometime this fall. In the meantime, users can pay their money and take their choice.

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And on some of our single processor systems we even offer options like Automatic Error Checking and Correction. It keeps the computer going by automatically detecting and correcting all single bit memory errors.

Data General computers are less likely to break down because they have fewer interconnections than most computers. But if one of our computers ever does go down, you can call in your local Data General service representative. All the major functions of our computers are on separate modules so it's easy for him to locate problems, and easy to correct them.

So if you don't want to be let down by your computer, put in a call to Data General.

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## Credit Reporting Service Finds

# Mix of Line Facilities, Gear Keeps Net's Downtime Low

By Ronald A. Frank
Of the CW Staff

ANAHEIM, Calif. – When a data communications network handles 15,000 inquiries per hour, downtime must be kept to a bare minimum. One way to assure a reliable network is to select a mix of efficient line facilities and equipment, and that is what TRW Credit Data has done.

The company operates a nationwide consumer credit reporting service that provides information to department stores, finance companies, savings and loan organizations and other businesses which extend credit to customers.

About 7,000 subscribers depend on TRW for credit reports that are sent to more than 22,000 locations around the country. Many of these locations operate on-line to the firm's central data base of consumer credit records here.

The network operates with three types of remote city configurations. The configurations are based on the amount of inquiries handled in each area, but each has equal priority in accessing the credit records.

In lower volume areas, subscribers use teletypewriters which are connected over dial-up lines to a Comten 3670 concentrator. The 3670 acts as a store-and-forward device and transmits the credit inquiries to Anaheim at 4,800 bit/sec.

In higher volume cities, TRW subscribers have Datapoint 3360 CRTs which use a Hewlett-Packard 2114B processor to concentrate the data and transmit it to the DP center at 4,800 bit/sec.

For customers without their own terminals, a call is placed to a local TRW site where operators take the inquiry information and enter it into Raytheon PTS-100 CRTs. These terminals then operate online to Anaheim at 2,400 bit/sec.

## Terminal Transactions

The network includes Codex and International Communications Corp. modems. In some cases, split-stream modems on a 7,200 bit/sec line operate with a 4,800- and 2,400 bit/sec circuit, each handling a separate credit operation.

The network also includes Timeplex and Tel-Tec multiplexers. Most of the lines are Bell 3002-type with C-2 conditioning, but the net also includes one Telpak circuit in California.

"Without question, one of the biggest problems [in running a nationwide network] is keeping a data line up," according to Ray Ybaben, TRW vice-president.

Anyone going into data communications has to plan for a data line going down and there must be an alternate facility. There is about an hour of downtime, usually due to line malfunctions, in the network each day, he said.

In the early days of the TRW network each site had to have two lines in case the first went down. But now, with the improvement in modems and the reliability of the dial-up network, the credit service can rely on dial-up facilities for backup.

But this is not low-cost. An hour of dial-up operation between New York and Los Angeles can add $100 to the TRW monthly phone bill, Ybaben said. One reason is that two dial-up calls must be placed to establish a four-wire connection as a backup circuit.

The data base at the Anaheim DP center runs on dual 370/158s which operate under CICS. But the TRW software staff has developed its own multitasking control program which is slowly being phased in to replace the IBM software, according to Paul Palermo, TRW director of software services.

The data base is contained on IBM 3330-11 disks and contains files on an estimated 50 million consumers. Peripherals also include 24 IBM and Storage Technology Corp. tape drives shared between the 158s and a Model 155 that is used as the backup system.

The network includes 35 high-speed and 453 low-speed lines; data transmission is controlled by five Comten 3670 processors. Response time ranges from "three to 10 seconds" and the network operates 17 hours each day.

TRW pays about $35,000/mo for lines and $10,000/mo for modems, Ybaben estimated. But the system is like a moving target, having added 10 new cities in the past two years, and new lines are being added all the time.

## Programmable BDTS Exercises Systems

MOUNT LAUREL, N.J. – The Spectron Corp. buffered data transmission simulator (BDTS) is a programmable message generator for exercising data communications systems.

System installation and repair time is reduced by testing modems, terminals or controllers with actual polling sequences under simulated operating conditions, the vendor said.

The BDTS may be used to debug hardware and software by testing new communications protocols on-line without the need for CPU time. Data streams may be stored in 1,024 bytes of customer specified read-only memory (ROM) and/or 1,024 bytes of random-access memory (RAM).

Transmission may be synchronous or asynchronous, from 5- to 8 bit/char. and at any of 16 standard communication rates, using internal clocks or at any speed using the modem clock.

The BDTS may be used as a stand-alone device or in conjunction with the Spectron Datascope. In the latter configuration, the BDTS generates data patterns to exercise the equipment under test while the Datascope records and displays the performance.

Price of the BDTS is $1,850. Delivery is 30 days from the firm at Church Road and Roland Ave., 08057.

**The ABZ's of DBMS**

***A special supplement on Data Base Management Systems in the September 24th issue of Computerworld.***

Data Base Management Systems are the subject of widespread interest in the DP community today, and they will be the subject of this special supplement in *Computerworld*. We'll be examining many aspects of Data Base Management in detail, with special emphasis on the applications that are best suited to Data Base Management. You'll see articles, tutorials and applications stories on topics like these:

- **When to use a Data Base Management System vs. another approach**
- **Applications best suited to Data Base Management**
- **Matching functional capabilities and system features to specific types of applications**
- **The advantages and disadvantages of using a network's Data Base Management System vs. an in-house system**
- **Danger Signals - things that can go wrong, and what to look out for in particular**
- **The benefits of Data Base Management vs. alternative approaches**
- **What's to be said for designing your own system, versus using a package**

If you have anything to do with Data Base Management, you should be reading this special supplement in the September 24th issue of *Computerworld*. And if you're a marketer in this field, your ad should be there. Closing date is September 4th. Contact your area *Computerworld* salesman for complete details. Or, call Judy Milford or Sara Steets at (617) 965-5800.

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## Let CW Share Data Entry Triumphs

October is data entry month at *Computerworld*. And the Special Report in the Oct. 29 issue will cover the wide spectrum of data entry with heavy emphasis on remote data capture.

You don't have to be a professional writer to tell of your installation or application in CW. If you believe your installation or application is unique and cost-effective, just write us a long letter (three or four typed pages, double spaced) and explain what you had before, what you have now, why you changed, the advantages of the new system and just how effective the change was from a cost or time savings point of view.

Pitfalls identified or overcome are alwaya interesting, as are recommendations to other users who may embark on the same course.

Our team of editors will take it from there.

If you're not sure of just how interesting your story is, send a short note to Associate Editor Vic Farmer or Assistant Editor/Systems Patrick Ward, who are putting the report together.

One of the most popular stories in CW is just this sort of application story.

CW is at 797 Washington St., Newton, Mass. 02160.

### 3350-Compatible

# STC Adds Fixed-Disk Units

**By Patrick Ward**
**Of the CW Staff**

LOUISVILLE, Colo. – Storage Technology Corp. (STC) has boosted the linear bit density of its 8400 and 8800 fixed-disk drives to offer IBM 3350-compatible storage at a cost up to 50% lower than the IBM product, according to STC.

The STC models take a different path from the recently announced California Computer Products (Calcomp) 235-4, which employs 700 track/in. technology to provide 400M byte per spindle storage [CW, Aug. 20].

STC has also announced an IBM 3350-equivalent 317.5M-byte drive, the STC 8350.

It costs about 15% less per month than the IBM device, STC said.

The newly announced STC 8450 and 8850 drives emulate two and four 3350s respectively. They use the "quad pack" design of the company's current 8400 and 8800 fixed-disk models to provide the effect of a single, 60-platter spindle, an STC spokesman said.

The 8450 and 8850, however, have 50% higher linear bit density at 6,425 bit/in. to provide 635M-byte- and 1,270M-byte storage respectively. The 8400 and 8800 provide 400M bytes and 800M bytes.

The STC 8450 and 8850 use the same 238 track/in. ratio used on the 8400 and 8800. Both the 8450 and 8850 provide a 1,198 kbyte/sec transfer rate, the firm said.

The currently available 8400 and 8800 models can be field upgraded to 8400s and 8450s in late 1976, STC said.

In a comparison of a one-controller, eight-drive IBM 3350 configuration against a one-controller, four-drive STC 8850 system, an STC spokesman said 1M byte of storage would cost $3/mo on the IBM 3350 and $1.55/mo on the STC 8850.

STC said the 8450 and 8850 are primarily aimed at users that have low-activity disk drives, new applications that have heretofore been unjustified because of the costs of on-line storage and tape data set migration.

All the STC drives will attach to IBM 370 Models 135 and above and can be interfaced through the STC 8000 disk control unit. A single controller can intermix 3330-equivalent STC 8100s, 8350s, 8400s, 8450s, 8800s and 8850s, STC said.

Two-year lease prices are approximately $500/mo for the 8350 drive; $955/mo for the 8450 and $1,485/mo for the 8850. Customer shipments are sheduled for the fourth quarter of 1976 from the firm at 2270 S. 88th St., 80027.

# CFI, IBM Score High in Datapro Media Survey

DELRAN, N.J. – CFI Memories, Inc., won the highest user satisfaction ratings of any disk pack vendor, and IBM led the list of tape suppliers in a recent survey by Datapro Research Corp.

Datapro had responses from a total of 318 users of DP media and supplies. The respondents reported their overall experience with the various brands of supplies by assigning a rating of excellent, good, fair or poor to each vendor's products.

Nine brands of disk packs were rated by 10 or more users, and all nine earned high ratings. CFI Memories amassed a weighted average user rating of 3.7 on a scale of 4 for excellent, 3 for good, 2 for fair and 1 for poor.

IBM, Memorex, 3M and Wright Line all tied for second place at 3.6, and they were followed closely by Caelus (3.5), BASF (3.4), Control Data (3.4) and Nashua (3.4).

The survey also brought responses from IBM 3348 data module users who gave their removable disk packages a 3.7 score. Thirty out of 39 respondents rated the product "excellent," Datapro noted.

Among magnetic tape suppliers rated by 10 or more users, IBM was ahead with a weighted average score of 3.8. Graham and 3M tied for second place at 3.6, followed by BASF and Memorex at 3.5.

Among the vendors of printer forms rated by 10 or more users, Duplex Products earned first place with an average rating of 3.7, followed by Shade, Inc. (3.5), Data Documents (3.4), Moore Business Forms (3.4), Standard Register (3.3) and Uarco (3.2).

Jersey Tab Card received top honors among punched card suppliers rated by 10 or more users by earning an average rating of 3.7, followed by IBM (3.6), Data Documents (3.4), OEI (3.4), Pryor (3.3) and National Electronic Card (3.2).

Moore Business Forms and Codo Manufacturing Corp. shared 3.7 ratings to lead the printer ribbon suppliers. Burroughs and IBM followed with 3.5 scores. Aetna Products Co., Columbia Ribbon and Carbon, Data 100 and Kee Lox Manufacturing Co. shared the next highest score of 3.3.

Memorex led floppy disk vendors with 3.7 acore; IBM trailed closely with a 3.6 and Wabash came third with 3.3.

MSI Data Corp. led the list of magnetic tape cassette and cartridge suppliers with a 3.5 user rating, ahead of Sycor and NCR which had 3.0 and 2.3 ratings respectively.

These survey results are contained in "All About EDP Media and Supplies," a 30-page report reprinted from the August Supplement to *Datapro 70*. The report also includes comparison charts that summarize the product lines of 167 vendors.

"All about EDP Media and Supplies costs $10 per copy from the research firm at 1805 Underwood Blvd., 08075.

# Ansi Publishes OCR-B Standard

NEW YORK – OCR-B, an alternative character set for optical character recognition (OCR) systems that is easier for human beings to read, has just been published as an American national standard by the American National Standards Institute (Ansi).

The widely used optical character set, OCR-A, has been in use for a number of years. Its emphasis is on optimum machine performance. OCR-B was created to give users a choice of readability between machines and people; its emphasis is on conventionality of appearance to make it easier for employees to work with OCR documents and records, Ansi said.

The American national standard for OCR-B has been approved by the U.S. secretary of commerce for use in acquisition of federal computer systems by the General Services Administration. It has been designated Federal Information Processing Standard 32.

### Sizes, Shapes Set

The standard describes and illustrates shapes, sizes and printing positiona of OCR-B alphanumeric characters and symbols. The character repertoire includes numerals, upper-case and lower-case characters and special symbols in one or more of three different sizes.

The standard was developed by a subcommittee on OCR of American National Standards Committee on Computers and Information Processing, X3. The Computer and Business Equipment Manufacturers Association (Cbema) holds the secretariat.

Designated American National Standard Character Set for Optical Character Recognition (OCR-B), X3.49-1975, the 60-page standard costs $9.75 a copy from the Sales Department, American National Standards Institute, 1430 Broadway, 10018.

Ansi describes itself as the clearinghouse and coordinating agency for voluntary standardization in the U.S. It approves a standard when it receives evidence that all parties having a substantial interest in a particular standard have been given an opportunity to cooperate in the standard's development or to comment on its provisions.

# Tape Unit Interfaces HIS CPUs

MT. LAUREL, N.J. – The F383 magnetic tape subsystem from Formation, Inc. is said to be an automatic loading, fourth-generation tape system that is plug-compatible with Honeywell Series 200 and 2000 computers.

The F383 can function in eight Honeywell-equivalent modes, such as 7-channel (at 200-, 556- or 800 bit/in.), and 9-channel (800- or 1,600 bit/in. NRZ), and at speeds from 70- to 150 in./sec.

The F383 microprogrammed control unit can accommodate all modes and can control up to eight tape drives in a dual-channel configuration, with read-write simultaneity.

The system's software is compatible with Honeywell software, as well as being industry-compatible with S-6000, Ebcdic and Ascii tapes, Formation noted.

Rental of the basic F383 magnetic tape subsystem starts at $3,500/mo from the firm at 823 East Gate Drive, 08057.

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# System Keeps Cash-and-Carry Operation Competitive

**By Patrick Ward**
**Of the CW Staff**

PROVIDENCE, R.I. – Computers may be leading to a cashless society, but they can help "cash-and-carry" stores compete in the retail marketplace, too.

For example, the four Brewsters cash-and-carry building materials stores in New England use an automatic invoicing system that provides management with current sales and cash information, eases price changes and inventory control and even gives salesmen more time to deal with customers, according to Stephen Maloney, vice-president of finance of Bridgton Distributing Co., which runs Brewsters stores.

Before Brewsters began using an in-house 32K Univac 9214 CPU in 1972, salesmen would write out their own invoices at the sales counter. This often required an adding machine and could take 10 to 20 minutes, including the time to figure taxes, Maloney recalled.

Now the process takes about 10 seconds, he said. Each store has two Uniscope 100 CRTs behind the sales counters. To invoice an order, the salesman keys in the number and quantity of the items his customer is purchasing and hits a button; the system prints out the complete invoice on a Centronics printer.

Brewsters can very easily change the prices of its items by updating files in the automatic invoicing system, Maloney noted.

The terminals in the Wilmington, Mass., Hartford, Conn., and Milford, Conn., stores are linked by 2,400 bit/sec lines to Brewsters headquarters here.

The computer center in Providence batch processes about 1,600 invoices a day during the week and about 2,500 on Saturdays. On a typical day, Brewsters may take in $100,000 to $125,000 in cash.

The system prints an updated inventory list each Friday, analyzing sales by item. However, Brewsters is working toward an on-line inventory system which will allow managers to inquire from terminals for information on quantities on hand and on order.

### Additional Duties

The computer figures in Brewsters cash-and-carry operation in other ways, too:

- At mid-week, it provides a list of all accounts payable scheduled for payment and prints the checks each Friday, automatically figuring discounts. This complete voucher system accounts for all purchase orders, vendors and dates of payment.
- The computer is programmed with five methods of calculating sales commissions, depending on the store and salesman. It figures commission at the close of business each Friday.

The Univac 9214 at Brewsters' Providence office is still being used while the cash-and-carry operation switches over to a 90/30.

The 40 full or part-time sales people at all four stores are paid each week, and the computer includes the commission for the previous week when it prints the paychecks.

- The Brewsters pricebook is prepared from a computer printout of items and prices based on the inventory control system. The pricebook is then printed in about two days.

"The computer gave us immediate savings here," Maloney said. "We used to spend six weeks preparing and editing the initial proofs. Now we receive a printout immediately."

The 9214 also provides monthly printouts of financial statements for each store and supplies management with a monthly summary of the market value of the firm's total investment portfolio.

### 'Cards Out of Our Ears'

Brewsters had used a service bureau before installing the 9214. "We had cards coming out of our ears and had to crate them down to the service bureau," Maloney recalled.

The cost of the service bureau was runing close to the cost of a 9214 when the firm decided to bring in its own CPU, he said.

Brewsters will soon replace the 9214 with a 98K Univac 90/30 whose extra capacity will be able to support several additional applications, Maloney said.

Three Univac 8416 disk subsystems will provide about 88M bytes of storage. The shop will also have a 500 line/min Univac 0773 printer; a Uniservo 6C tape subsystem; a 500 card/min card reader; and a 75- to 160 card/min card punch.

In addition, the installation will include a communications adapter handling six full-duplex lines servicing a total of 10 Uniscope 100 CRTs.

The Brewsters communications application was developed by a Univac project engineer. Brewsters' own programmers developed the accounts payable, payroll and general ledger batch programs.

Rath and Strong, Inc., a consulting firm, provided the inventory and inventory analysis programs.

Brewsters is now offering its batch programs and techniques to other interested firms.

# Maintenance Society Seeks New Members

WOODLAND HILLS, Calif. – The Association of Field Service Managers (AFSM) is seeking members from the managerial levels of firms engaged in the maintenance of computers or similar electronic gear.

The group hopes to provide a base of practical knowledge to improve the overall performance of the profession, as well as provide a means for the exchange of ideas.

Membership information is available from the AFSM, c/o J. Thomas Evans, 20501 Hatteras St., 91364.

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You can rent, lease or buy both the printer and controller. For full information, call or write Joe McDonough, Grumman Data Systems Corporation, 45 Crossways Park Drive, Woodbury, New York 11797. (516) 575-3034.

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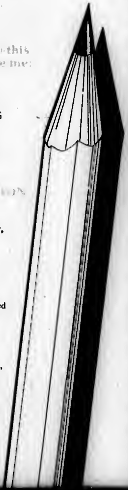

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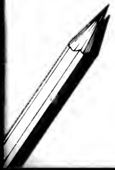

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# Nixdorf Combines U.S. Products As Basis of Turnkey Philosophy

Basic Nixdorf 8870 system includes one 10M-byte disk drive, line printer, CPU and terminal.

**By Vic Farmer**
**Of the CW Staff**

CHICAGO – While the hardware is pretty standard, it is the operating system and promises of maintenance and software applications support that is sure to interest users looking at the Nixdorf 8870 minicomputer system.

The Nixdorf name on the nameplate is about the only thing on the 8870 minicomputer system that is German. Other than that, Nixdorf has managed to combine Digital Computer Control's CPU, Diablo disk drives, Data Products and Centronics printers, Hazeltine CRTs and Pertec tape drives into a typical business-oriented turnkey minicomputer system.

And, in a plant just outside of Chicago, it assembles and tests the equipment.

True, there is a good chunk of Nixdorf engineering in the system integration, but it is mostly the operating system that forms the goldplate around the basic iron. Nixdorf also supplies a German-made, 165 char./sec matrix impact printer as an option.

The operating system is designed to support interactive time-sharing and background processing simultaneously. Through the use of virtual memory up to nine CRT terminals can be added without increasing main memory size, according to the firm.

The disk-resident operating system allows for:

- On-demand dynamic disk allocations.
- Automatic terminal usage accounting system.
- Sequential, indexed, random and text-file processing.
- Automatic blocking and deblocking of data records.
- Automatic task scheduling.
- Program chaining.

The only language presently available is Business Basic; extensions include extended precision decimal arithmetic, data files, signaling, chaining, error branching, special functions and provision for large strings and arrays.

Applications packages are available for wholesalers, distributors, manufacturers, medical clinics and municipalities with standard functions ranging from sales analysis to general ledger and billing.

The basic configuration is a 48K-byte core memory CPU, a 10M-byte disk drive, 100 line/min printer and one CRT keystation. This costs $40,000 with software additional. Leases are available from a third-party lessor.

The maximum configuration has 64K-byte memory, two disk drives and nine CRTs with a printer capable of 600 line/min. The disk drives are 5M-byte removable and 5M-byte fixed on the same spindle.

Nixdorf Computer Inc., U.S. subsidiary of Nixdorf Computer AG, is at Suite 365, O'Hare Plaza, 5725 E. River Road, 60631.

### *And Matrix Line Printer*

# Two Models Added to NCR 399 Line

DAYTON, Ohio – Two disk-oriented NCR 399 accounting computer systems, one featuring a matrix line printer, are available from NCR Corp.

These top-of-the-line models are designed for small and medium-sized businesses, as well as large firms with decentralized information processing requirements, NCR said.

The first model, the NCR 399-113, rents for $795/mo and has a purchase price of $31,800. It consists of a processor with 20K memory, one magnetic tape cassette handler and a disk unit with a storage capacity of 4.9M characters.

The second model, the NCR 399-114, includes the 20K processor, one cassette handler, a common trunk, the 4.9M-character disk unit and a 55 line/min matrix printer. This model rents for $925/mo and has a purchase price of $35,750.

### Ledger Cards Optional

Use of magnetic ledger cards is available as an option.

Both models will be available for delivery in December.

Prices for the previously released hasic 399 system, which uses magnetic ledger cards or magnetic cassettes as storage devices, begin at $14,000 and range to about $26,000, depending on the number of peripherals ordered. The 399 can be used either as a free-standing system or satellite system.

The 4.9M-character disk unit used with the two latest 399 models is a modified version of the 9.8M-character NCR 656 disk unit. The larger capacity disk is also available as a peripheral for all 399 models.

The smaller disk unit, including integrated controller, is priced at $12,000.

NCR also announced the price of the larger capacity 656 disk unit has been reduced from $17,500 to $15,000.

The matrix line printer is a table-top, 132-column single-head impact printer. It prints at a rate of 173 char./sec.

The printer, which is available for delivery this month, can be added to currently installed NCR 399 systems. It sells for $4,995 and has a monthly rental of $160.

# Three Similar Minis Target of Ticketing Task

GOTHENBURG, Sweden – Swedish ferry operator Tor Lines AB has installed a minicomputer system in each of its three ports of call in an effort to increase the load factor of its fleet of 10 ships and to minimize the time the ships spend in ports.

Tor Line operates eight freighters and two passenger ferries between its home port of Gothenburg, Amsterdam and the English port of Immingham. The passenger ships carried more than 270,000 passengers in 1974.

"With increasing loads, the earlier manual system for seat and cabin reservations, travel document preparation and check-in procedures became unwieldy," said one Tor Line official. "It resulted in low load factors and long port times."

With additional ferries set to begin service this year, the shipping line automated the system using minicomputers and data entry stations at ticket sales offices and check-in counters.

In order to get complete redundancy and minimize communications costs, identical minicomputer systems were located in each of the three countries involved. Should one system become inoperative, the other systems are still available through normal dial-up telephone lines.

Each system consists of a Hewlett-Packard dual-processor 2000F minicomputer with 23M bytes of disk storage and a 200 line/min printer.

The Gothenburg system is equipped with a 600 line/min printer. All systems have identical data bases which are updated automatically every night with each day's new data.

The newly installed systems, with Tor Line Passenger Administrative System (Topas) software, will be used initially for passenger reservations, to compile shipping statistics and perform administrative tasks. Applications will be expanded later to include the freight shipment operations, the firm said.

# S/3 Users Meeting in Pa.

YORK, Pa. – The Central Pennsylvania System/3 Users Group is holding a two-day seminar on the System/3 in Harrisburg, Pa., on Oct. 28 and 29.

Twelve sessions will cover such topics as comparison of the System/3 models 8, 10, 12 and 15; data entry with cardless considerations; and teleprocessing.

Registration is $35. The users group can be reached through Box 174, 17405.

# Vinyl Covers Protect System/3s

RUTHERFORD, N.J. – A durable, heavy-duty set of vinyl covers for the IBM System/3 is available from the S/3 Supply Co.

The covers are designed to protect against sprinkler system and other utility malfunctions.

Covers are available for all models of the System/3 and System/32. A typical Model 10 set costs $170.

The firm can he reached through P.O. Box C, 07070.

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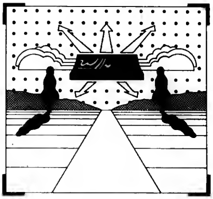

**HARDWARE** It's no secret; Datapoint Corporation offers the industry's broadest roster of proven dispersed data processing systems, a diversity and selection of equipment with particular appeal for the network system designer. Our full product line includes the Diskette 1100 and Cassette 1100 Intelligent Terminals, the Datapoint 2200 Business Processor and the Datapoint 5500 Advanced Business Processor, all offering powerful internal computers, easy to read video display screens, full typewriter-style keyboards and many other features. Each of these units offer users a sophisticated, integrated data entry, data storage, local data processing and data communications capability.

These versatile, fully programmable processors are backed by a wide array of peripherals expressly designed for business applications. These include: *Three Disk Units;* a low-cost diskette unit, a powerful removable cartridge disk system and, for high volume storage applications, a 24 million character mass storage disk unit. · *Six Printers;* ranging from a 30 cps Servo printer to a 300 LPM Line Printer. Matrix and belt printers are also available. · *Three Tape Units;* both 800 and 1600 bpi drives in 7 or 9 tracks. *Communication Adaptors;* five models are cataloged to cover the communications spectrum from 110 Baud to 4800 Baud, synchronous and asynchronous. IBM compatible, too. *Three Data Terminals;* for network utilization. These well engineered low-cost systems offer easy, reliable operation. Optional terminal printer also available.

Powerful yet easy to use, this equipment places a formidable computing capability in the hands of commercial and business users, allows the effective use of computer power not only by professional EDP personnel in home office facilities but also by relatively untrained workers in field offices. This family of Datapoint equipment (and it's growing all the time) has generated enthusiasm and excitement as well as bottom line profits wherever it's been installed. For users, Datapoint hardware has reduced out of pocket operating costs, eliminated the vexation and extra expense of input error, provided management with a surer control over company operations and allowed efficient computerization of hitherto manually handled work assignments.

***Visit us at booth 2224, INFO '75, New York***

## TWO

**SOFTWARE** Fact: a dispersed processor is only as good as its software. That's why Datapoint offers the industry's most extensive library of programming languages, utility and data communications packages, diagnostic routines and associated programs designed for dispersed processing usage.

This software has been created with the intent of making the effective use of Datapoint dispersed equipment as simple and uncomplicated as possible, especially for clerical personnel in field office facilities who may not have a computer background.

Proven Datapoint programming languages include · DATABUS which offers high-level business language features for both data processing and data entry applications. (DATABUS programs written for the 1100 Intelligent Terminal are upward compatible with our multi-user DATASHARE system.) · DATAFORM, a special and again easy to utilize language designed for data entry activities which can be employed by a secretary or clerk without special training. · RPG II, the IBM-standard business language which enables users to take existing RPG II programs and run them virtually unmodified on Datapoint equipment. · BASIC, the well known interactive scientific language, and · DATAPOLL, a data communications language which permits easy error-free automatic data transmission between field work stations and home office facilities. In addition, our DATASHARE multi-programming, multi-terminal system permits a Datapoint dispersed processor to act as a "computer utility" resource for as many as 16 work station terminals for both data entry and data processing tasks.

For maximum efficiency, each Datapoint system operates under sophisticated Operating Systems such as DOS (Disk Operating Systems) and CTOS (Cassette Tape Operating Systems). These Operating Systems offer powerful utilities and easy file management. Files are completely dynamic, and users can add, delete and merge data files using simple commands.

Datapoint software is functional; it's designed for use in basic program creation under demanding professional circumstances and yet can be quickly assimilated and utilized by inexperienced personnel. It's comprehensive; all dispersed user situations are covered by some portion of its capability. Best of all, Datapoint software is available now. We're not talking about software that's "under development"; we're talking about proven, in-use programs. That's a major difference between Datapoint and our competitors.

**Home Office:** 9725 Datapoint Drive, San Antonio, Texas 78284 (512) 690-7151 • **Sales Offices:** Atlanta/(404) 458-6423 • Austin/(512) 452-9424 • Baton Rouge/(504) 926-3700
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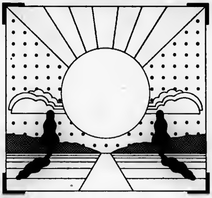
# Big Four

## Leadership in Dispersed Data Processing

### THREE



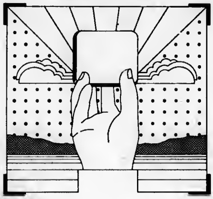
**PRICING** Unquestionably, Datapoint has led the way in providing a sophisticated computer capability for applications and in field office environments that only a few years ago would have seemed incredible. We've achieved the same sort of breakthrough in the pricing for these products. We've been able to bring sophisticated equipment and software within the economic reach of the dispersed user by taking full and progressive advantage of state of the art advances in solid state technology and by improvements in data communications capabilities. For example, the typewriter-sized Datapoint 5500 Advanced Business Processor with up to 48K user memory based on the new LSI memory technology affords a data processing capacity that only a few years ago would have required a sprawling mainframe computer. These advances not only permit us to offer a superior end product, thanks to our outstanding research and development and engineering groups, but they've also enabled us to deliver a much greater productivity bang-for-the-buck to our customers.

The highly integrated capability represented by Datapoint dispersed processors for data entry, local data processing, local data storage and file management, and data communications offers the business user a powerful work tool at prices as much as an order of magnitude below those charged by competitors for a comparable production capacity. Consider these actual monthly lease rates (two year lease with maintenance) for key items of Datapoint equipment, and bear in mind that in many user situations just a few of these units can handle a company's *total* data processing.

| | | | |
|---|---|---|---|
| Datapoint 2200 (16K) | $392 | Cartridge Disk | $328 |
| Datapoint 5500 (24K) | $667 | 9-Channel Tape | $273 |
| Diskette 1100 (16K) | $316 | Datapoint 3600 Terminal | $ 70 |
| 300 LPM Printer | $452 | Terminal Printer | $144 |
| 120 LPM Printer | $214 | | |

For a DATASHARE configuration which might involve a number of the units indicated above, typical per station lease costs for a 16-station system can work out as low as $260. We encourage you to work out the significance of these economics in your own organization. When it comes to dispersed data processing, no other company can better the price/performance capability offered by Datapoint equipment.

### FOUR



**SERVICE** A sometimes neglected aspect of computer operations is field service. But this concern can't be ignored by designers and operators of dispersed data processing networks who may have equipment scattered literally all over the landscape, often in remote locations. At Datapoint we've taken a dual approach to service — first, we've designed and engineered a product line that combines ruggedness with ease of usage so that the need for service is minimized, and second, we've created a national customer service force that's geared to go anywhere at any time to meet the needs of our customers. In recognition of the extreme importance the service function has for our clients, especially those with facilities in remote locations, we've organized a large and highly professional customer service force, competent in all aspects of maintaining and servicing Datapoint systems and geared to fast, professional response to maintenance problems wherever they may occur. To make it possible for our users to make swift, certain communications with this service force, we've created the Datapoint National Customer Service Center which is staffed on a 24-hour day, 7-day week basis. By dialing a toll free number (national: (800) 531-5770, in Texas: (800) 292-5858) users are guaranteed a response to their needs for a local field service representative within one hour, and usually much sooner. The motto for our Customer Service force is "Good Service is Good Business," and we really mean it.

*The Big Four, Hardware, Software, Pricing and Service, constitute the fundamental reasons behind Datapoint's continued leadership in dispersed data processing. The more than 25,000 Datapoint dispersed processing systems now in productive use in field and home offices are tangible evidence of our success at emphasizing these fundamentals. For further information on Datapoint, its capability in dispersed data processing and how it can help your company, write or call the sales office nearest you or contact Datapoint, attention: Marketing Communications, 9725 Datapoint Drive, San Antonio, Texas 78284, (512) 690-7151.*

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The leader in dispersed data processing

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# Mini, 'Beneficial Arson' Aid Forest Fire Research

MACON, Ga. – One way to fight forest fires is with forest fires – controlled fires which remove hazardous natural fuels that build up on the forest floor.

And one way to develop this art of beneficial arson – while also controlling the billowing smoke clouds produced – is to set fire to miniature table-top forests and study the resulting conflagration and smoke, using a high-speed scientific data collection and a minicomputer to analyze the data.

Forest management researchers at the Southern Forest Fire Laboratory here currently are focusing efforts on determining the fuel and weather conditions for minimum smoke production in "prescription" fires. This entails chemical analysis of the smoke as it travels downwind from the fire

A specially constructed combustion room houses the table on which the actual miniforest beds are regularly created and then set ablaze. More than 50 sensors monitor the event, scanning at 1 second intervals, feeding data into the system.

The mini system collects, processes and outputs the analysis in real time while simultaneously servicing four other laboratory stations engaged in related forest research.

The high-speed scientific data collection and processing system at this Department of Agriculture's Forest Service Laboratory employs a Hewlett-Packard 9600 computer system with 24K words of core memory, a 2.5M-word disk, analog-to-digital converter and several I/O devices such as tape drives, printer and card reader.

### Cubed Combustion

One key experiment conducted by Paul W. Ryan, research forester at the laboratory, involves arranging a table 3-ft by 4-ft in the combustion room (a 30-ft cube-shaped room) with typical forest fuels, such as pine needles, leaves, grasses and organic materials in various stages of decomposition or other understory materials of a timber stand, such as shrubs, vines and seedlings.

The slope of the table is set to represent the conditions under study; air temperature and humidity are preconditioned and fed into the room and the model is ignited.

Ryan uses a syringe to obtain a smoke sample produced from a miniature table-top forest fire at the Southern Forest Fire Laboratory. A Hewlett-Packard 9600 minicomputer is employed to collect and process the scientific data.

The computerized solid-state system has dramatically speeded the forestry research here, Ryan said. "We used to use an array of strip chart recorders. It took two weeks to reduce the data for each test fire, and we sometimes run several fires a day. We would then punch cards for input to the computer for analysis.

"Now I can review outputs while observing the fire, make adjustments and observe the effects," Ryan said.

# Cramer Designs Kits for Micros

NEWTON, Mass. – A ready-to-assemble microcomputer, available initially in three models, has been introduced by Cramer Electronics, Inc.

Termed Cramerkits, the products cost less than $500.

Developed in concert with Microcomputer Technique, Inc. of Reston, Va., the specially designed kits come equipped with either an Intel 8080, a Motorola 6800 or a Texas Instruments TMS 8080 as the central processing unit.

Each kit includes (in addition to all parts except board and power supply) engineering documentation, literature, schematic diagram and programs recorded on a cassette tape.

The components and documentation package are said to enable a designer to design and fabricate a custom microcomputer to suit his specific needs.

Cramer is at 85 Wells Ave., 02159.

## Mini Bits

### 4K Memory Boards Fit PDP-11/45, -50

MAYNARD, Mass. – Digital Equipment Corp. now has a memory matrix board with 4K words of bipolar parity memory for PDP-11/45 and PDP-11/50 computers.

Called the MS11-AP, the solid-state memory unit permits savings of approximately 60% over previously available bipolar memory from DEC for these computers, the company said.

In the matrix board arrangement, up to 32K words of bipolar memory can be installed in a PDP-11/45 or -50.

Bipolar memory permits computer operation at speeds up to 3M instruction/sec, approximately three times as fast as core. Speeds 40% faster than MOS semiconductor memory are standard with bipolar memory, DEC said.

The unit is priced at $19,700 in 16K-word units.

### Data Miser Links to PDP-11

SCOTTSDALE, Ariz. – The Data Miser DM06 from International Memory Systems is a 200 track/in. moving-head disk drive available as a plug-compatible replacement for the Digital Equipment Corp. RK05 as a daisy-chain expansion for PDP-11 users who have the RK11/RK05 combination.

The Model DM06 has a capacity of 5M bytes and is plug-compatible with the DEC RK11 and all standard DEC operating systems.

The complete electronic interface is contained on a single 10-in. by 10-in. board.

The unit is priced at $2,950 from the firm at 14609 Scottsdale Road, 85260.

### Duplicator/Verifier Added by Fabcit-Addo

GREENWICH, Conn. – The Series 4000-Option 10A duplicator/verifier from Facit-Addo, Inc. is said to be capable of duplicating and verifying a wide range of paper/Mylar tapes from five through eight channels.

The system consosts of a tape processor, two 4020 readers, one 4070 tape punch and tape handling spoolers.

The duplicator/verifier performs two functions. It duplicates punched paper/Mylar tapes and then checks the duplicate by comparing it to the original.

The unit is priced at $10,995 from the firm at 66 Field Point Road, 06830.

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### Cuts Record Management Costs

## System Ups Retailer's Efficiency 20%

NEW YORK – Pinpointing a sales slump before it reaches crisis proportions is one of the primary benefita minicomputers are providing retail supermarkets, according to the president of a 16-store chain here.

"With skyrocketing labor costs and the increase in food prices, record management is becoming one of the few areas where supermarkets can actually minimize costs," said John Catsimatidis, president of Red Apple Supermarketa. "And the minicomputer permits us to have a lot more control over our operation, which will in turn benefit the consumer.

"In fact, the Basic/Four Corp. system we installed a year ago has improved our efficiency by about 20%. For example, we have 525 employees, and it used to take us three days to do the payroll with the old basic accounting methods we were using.

"Now, however, it only takes an hour to do the payroll, once the input is provided."

But where the computer has really proved invaluable is in assessing what happens in each of the 16 stores at a given time and then comparing the data. Each store is broken down into 20 departments. If there is an 8% decrease in sales in one department, the minicomputer lets management zero in immediately on the trouble spot.

## Twin Minis Record Stock Transactions

STOCKHOLM, Sweden – Buying and selling at the stock exchange generates a complex amount of fast-moving data which requires sophisticated equipment for efficient distribution. With the twin minis at the Stockholm Stock Exchange, banks and brokers throughout Sweden will be able to receive information on every transaction on the exchange within seconds after the deal has been concluded.

For more than half a century, roll call transactions at the exchange have been handled by numeric terminals used to submit bids. When buyer and seller agree, a bell rings and the deal is flashed on a display board actuated by electromechanical relays.

But this is strictly a bidding system. Until the two Data General Nova 2/10s went into operation, deals had to be recorded manually by clerks using pen and paper. For distribution of the results, brokers in the Stockholm area have been able to subscribe to a special telephone service that enables them to listen to the floor proceedings as they take place. Ticker tapes have never been used in Sweden. Outside of Stockholm a special newscast, broadcast live from a studio in the stock exchange building, gave results.

But with the Nova system, the two record clerks use keyboard terminals for on-line recording of transactions.

When the system is fully operational this fall, any brokerage office in the country will be able to connect a terminal for real-time display of transactions. And at the end of the session, the day's stock list with turnover figures and most-traded-issues information will be sent out to those who have printers installed.

Some of the biggest deals, however, take place during floor trading after the official session ends.

This used to be a noisy affair with much waving of papers and most-traded data being chalked up on a blackboard. With the Nova installation, a display screen has replaced the blackboard, and broker representatives submit their bids quietly from their booths, using terminals.

The system was designed and programmed by AU-System AB, a local software house. In all, about 25 terminals have been installed in the building. The system uses a Nova 2/10 with a second unit for backup, 2M bytes of disk storage, magnetic tape, cassette tape and a large multiplexer.

"These two Novas give us exactly what we need and no more," said Gosta Lindberg, first secretary at the stock exchange. "We spent a couple of years looking into various alternatives and had a number of offers from the large computer firms. Most of them suggested giant systems. We would never have been able to make full use of them. This gradual installation of a minicomputer facility is much cheaper and seems just right for us."

## Agency Uses DP To Study Demand For Wool Goods

LONDON – With its share of the world market for textile and carpet goods constantly under assault by synthetic fiber products, the International Wool Secretariat (IWS) has enlisted a mini to assure continued prosperity for thousands of dealers of wool products in more than 40 countries.

Headquartered here with branches in 27 countries, the IWS is a nonprofit organization that builds markets and stimulates demand for wool and wool products around the world.

To assist in worldwide market analysis, promotional efforts and product research, IWS purchased a PDP-15 computer system from Digital Equipment Corp. Using punched cards for data entry and magnetic tapes as the primary storage medium, the system produces scheduling, accounting and statistical reports on a budget limited by the ever-changing fortunes of IWS' sponsoring organizations – wool growers in South Africa and Uruguay, producers and government agencies in Australia and New Zealand.

### Two Surveys Yearly

Twice each year a survey is conducted among Woolmark licensees to collect sales and order information. The data is analyzed by computer to pinpoint trends in consumption and demand for quality garments and other goods, broken down into product, geographical area, pricing, etc.

Results of these surveys and returns enable the IWS to select geographical and product areas where the agency should expand or contract its promotional effort in global markets for men's, women's and children's wear, knit wear, carpets and home furnishings. The computer produces a proposed media schedule, showing each IWS branch where advertisements should be placed during the next half-year period.

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- SKOKIE, ILL. 60076, 7620 Gross Point Road, Phone (312) 965-7550
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Dataproducts PortaCom. Easy to take.

# Invest in yourself this fall.

## Announcing the EDP Seminar Series Fall Schedule

The world of EDP is caught up in a continuous revolution. It's only 24 years since the first business computer made its appearance, and we've gone from tubes, batch processing and single-site giants to multiprogramming, time sharing, data communications, giant minicomputers and hundreds of other technological innovations that were unheard of only recently. Keeping up with this revolution is difficult, to say the least. And that's why we've created the EDP Seminar Series.

The EDP Seminar Series gives you practical applications of the newest advances in computer management. What you learn will save you time and money, because each course is geared to practical dollars and sense application.

Remember, these are seminars, not lectures, and you'll be learning by doing in a shirtsleeve atmosphere. Workshops are an important feature of the Seminars, and round table discussions and shop talk luncheons complement the seminar presentations. The workbooks and course materials are yours to keep, so you'll always have a handy reference to all you've learned.

We've selected leading experts from around the country to guide each of our Seminars. They are highly accomplished specialists in their fields, experienced in presenting their techniques to industry and management. If you're involved in one of the areas shown, you should attend the EDP Seminar Series this fall. What you learn will benefit your company, your installation, and you.

### Data Communications Course #1010 —Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is $350. Additional registrants from the same company qualify for the reduced rate of $300.

| | | |
|---|---|---|
| **San Diego** | **Plaza Int'l Hotel** | **Sept. 29-30** |
| **New York** | **St. Moritz** | **Oct. 13-14** |
| **San Francisco** | **Dunfey's Royal Coach** | **Oct. 20-21** |
| **Dallas** | **Hilton Inn** | **Nov. 10-11** |
| **Miami** | **Marriott Miami Beach** | **Nov. 17-18** |

### Data Communications Course #1020 —Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is $450. Additional registrants from the same company qualify for a reduced rate of $400.

| | | |
|---|---|---|
| **Miami** | **Holiday Inn Airport Lakes** | **Dec. 1-3** |

### Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is $325. Additional registrants from the same company are charged only $275.

| | | |
|---|---|---|
| **New York** | **Summit Hotel** | **Oct. 22-24** |
| **San Francisco** | **Hyatt Regency San Francisco** | **Nov. 12-14** |
| **Chicago** | **Hyatt Regency O'Hare** | **Nov. 19-21** |

### How to Draft Effective Legal Agreements

This one-day seminar is a complete workshop for non-legal, technical people who may be called upon to draft legal agreements for their company. Also led by Roy Freed, this seminar covers a variety of formal agreements, their structure and the legal factors involved. You'll have all the basic skills necessary to write legal agreements, and you'll be able to spot items that really require the attention of lawyers. Cost for the seminar, including luncheon and a complete workbook on the subject, is $135.

| | | |
|---|---|---|
| **New York** | **St. Moritz** | **Oct. 8** |
| **Boston** | **Sheraton** | **Oct. 15** |

### Data Base Design

Given in association with Leo J. Cohen and Performance Development Corporation, this three-day seminar is a package-independent examination of the techniques required for the design of effective data base systems. The seminar covers Effective Record Design, Physical Storage Techniques, Optimum File Organization/Indexing Techniques, File Integration, and much more.

Cost for the seminar, including course materials, continental breakfasts and luncheons is $350. Additional registrants from the same company qualify for a reduced rate of $300.

| | | |
|---|---|---|
| **New York** | **St. Moritz** | **Sept. 22-24** |
| **Denver** | **Denver Hilton** | **Dec. 1-3** |

### Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $250.

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# COMPUTER INDUSTRY

## CI Notes

### Finalco Arranges Lease Plan

VIENNA, Va. – Finalco, Inc. has arranged $22 million of lease financing for 27 computers operated by the Northwestern Bell Telephone Co.

The lease underwriting covers presently installed Honeywell computers used by Northwestern Bell for its internal DP.

Most of the equipment is being converted from a Honeywell extended lease to seven- and nine-year Finalco leases.

### CA Signs $7 Million OEM Deal

IRVINE, Calif. – Computer Automation, Inc. (CA) has received orders for over $7 million worth of Naked Minis from four of its large customers, which President David Methvin views as a sign the OEM business has begun to improve.

General Computer Systems, Inc. submitted a $2.4 million order for minis for use in its key-to-disk systems.

### CDC Quits Fare Box Production

WASHINGTON, D.C. – Control Data Corp. said it is stopping production of automatic fare collection equipment for the Washington Metropolitan Area Transit Authority (WMATA) and will lay off about 150 employees.

The contract between CDC and WMATA is the subject of litigation between the parties. The WMATA ordered CDC to cease production, which CDC said was in violation of the court's jurisdiction of the matter.

CDC said it was originally contracted to produce the entire system, but a subsequent WMATA contract for production of part of the system with a third party repudiated the contract with CDC.

### Decision Data Operation on Skids

HORSHAM, Pa. – Although Decision Data Computer Corp.'s manufacturing affiliate for the European market has been placed in receivership, the firm said it sees no effect on its European marketing program.

Production here "can and will be increased to meet both domestic and international commitments for the company's products," according to Loren A. Schultz, Decision Data president.

The Department of Commerce of Northern Ireland, which has an 85% equity interest in the unit, International Engineering Ltd., has withdrawn financial support.

Shultz said he does not anticipate any material adverse effect on Decision Data over and above the firm's investment in the affiliate, which is less than $200,000.

## Supershorts

3M Co. has licensed Information Terminals Corp. to manufacture 3M's 1/4-in. tape cartridge, to be called the TC2000.

– – –

Entrex, Inc. has donated a Data General Corp. Nova to the Southern Maine Vocational Technical Institute in South Portland, Maine.

– – –

Boeing Computer Services and Cubic Data Systema have agreed to pool their equipment and marketing efforts for DP services in the San Diego area.

– – –

NCR is preparing to announce Cobol for its 8200 system.

### Correction

Tymshare, Inc. has reached an agreement in principle for the acquisition of Major Computer Corp., Jericho, N.Y. The Jericho firm has not yet been acquired [CW, Aug. 20].

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### *Worth $210 Million in '76*

## IBM-GSA Contract Ends Sole Sourcing

WASHINGTON, D.C. – The General Services Administration (GSA) will award IBM a contract worth $210 million but limited to installed equipment only for fiscal year 1976.

Under the contract, no new IBM equipment may be ordered – not even a tape drive – but features that do not upgrade a CPU, such as a floating point, may be rented or purchased, according to Theodore D. Puckorius, commissioner of GSA's Automated Data and Telecommunications Services.

Any new CPUs or peripheral gear must be obtained through competitive bidding.

Federal agencies may continue to rent installed systems, purchase certain rented equipment and obtain software and maintenance at 1975 prices until Jan. 1, Puckorius said.

At that time, government rental and maintenance prices will revert to commercial rates.

In cases where an agency needs IBM equipment for reasons of system compatibility, GSA will award a waiver requiring the agency to invite bids for that IBM hardware from the third-party industry as well as IBM.

In explaining GSA's reasons for limiting IBM's Automated Data Processing (ADP) supply contract, Puckorius said "there has been concern on the part of users and some industry people that IBM was getting favored treatment since we were negotiating with them after the final deadline had passed" [CW, June 18].

IBM failed to meet the Feb. 28 deadline set by GSA for submitting bids for the federal supply schedule.

In view of this, "to allow the company to bid on a full schedule would have been unfair," Puckorius said, "but at the same time, we had to support our present equipment base," estimated to be worth about $1.5 billion.

The government owns 1,060 various IBM systems, valued at $1.128 billion, and rents 303 IBM systems, worth about $419 million, sources estimated.

The final contract decision for 1976 is retroactive to July 1, 1975 and will run until Sept. 30, 1976. This one-time only, 15-month fiscal year was adopted as a means of shifting future fiscal years to an Oct. 1 starting point.

## Lessors Get Wedge Into Agencies

By Nancy French
Of the CW Staff

The DP supply contract signed recently by IBM and the General Services Administration (GSA), which contains no price list for new equipment, is seen as a breakthrough for third-party industry members as well as other mainframers seeking government business.

Under the contract, all new systems must be competitively bid on a case-by-case basis; there will be no more waivers for purchasing directly from a supply schedule. Even if an agency needs IBM gear for reasons of compatibility, for example, bids must be let not only to IBM, but also to members of the third-party industry.

After Jan. 1, when the contract calls for the federal price list to revert to commercial rates, third-party lessors will be able to compete on even ground, one lessor said.

At that time, "we will no longer be at the disadvantage of having to pay IBM's higher commercial prices for systems and then leasing them back to the government at rates below IBM's 8% government discount," he said.

Sentiments expressed by third-party dealers were summed up by Charles Barry, Comdisco's vice-president of government sales, who said, "I think. it's great the government is finally going to take advantage of the money that can be saved doing business with the third-party industry.

"The only thing GSA could have done better would have been to add a clause requiring all agencies to review present equipment leased from IBM to determine whether they could get a better deal elsewhere," he said.

"By the way," Barry added, "that's already a regulation, but it isn't being enforced."

Jim Benton, executive director of the Computer Lessors Association, agreed, providing "the agencies play it straight and put their bids out on the street. If

*(Continued on Page 28)*

## Firms With One Product Area Most Profitable: IDC

By Molly Upton
Of the CW Staff

WALTHAM, Mass. – The most profitable firms in the independent peripheral manufacturing field in 1974 were either single product area firms selling to original equipment manufacturers (OEM) or communications interconnect firms, according to a report from the International Data Corp. (IDC).

Plug-compatible manufacturing firms fared lowest in averaging profit as a percentage of revenues, placing below a category termed "innovative end-user product firms," the study said.

Profitable firms were generally small with revenues between $8.3 million and $23.1 million, compared with firms with revenues of $23.3 million to $168.7 million, the study found.

Firms with revenues less than $8 million were excluded, as were those related to mainframe manufacturers except for well-established subsidiaries that conduct business separately.

A single product area may be one of the following groups: keyboard equipment, disk/tape drives, memory equipment, printers, interconnect, autotransaction, graphics equipment, remote batch terminals and others, such as paper tape. However, within that group a company may offer a variety of products.

Ranked by descending order of revenues, Mohawk Data Sciences, California Computer Products, Inc., Memorex Corp., Ampex Corp., Dataproducts Corp. and Storage Technology Corp., were revenue leaders in 1974, the report said.

Centronics Data Computer Corp. took top place honors in percentage of profit with 19% from its printers, while Codex Corp. had 16.9% profit from its estimated revenues pertaining to the peripherals in the interconnect area.

Other firms with profits of 8% or more included Applied Digital Data Systems, Inc. (Adds), 16.8%; Information International, Inc., 11.8%; Cogar Corp., 9.6%; Wangco, Inc., 9.3%; Milgo Electronic Corp., 8.5%; and Sycor, Inc., 8%, IDC said.

Taking all 44 firms considered by IDC, the weighted average profit was 3.4% and the median profit about 2.6%.

Categorized by type of equipment, interconnect firms led the profit percentage with 11%, printers were 9.3%; graphics, 6.2%; other, 3.9%; disk/tape, 2.7%; autotransaction, 2.6%; keyboard, 2.2%; and memories, 1.8% during 1974, IDC said.

The single product firms showed 4.9% profits compared with 1.7% for the multiproduct companies, IDC said, while companies with domestic marketing orientation averaged a 4.4% profit compared with those with heavily international marketing efforts, 2.1%.

Firms marketing to OEMs showed profits of 6.4% compared with end-user firms' 3.2%. Those that marketed to both showed a 1.8% profit, IDC figures indicated.

Revenues will nearly triple for the independent peripherals area between 1974 and 1979, jumping from $2.3 billion to $6.4 billion, the report said.

Although the relative rankings of revenues to the product areas will stay about the same, the fastest growing areas will be autotransaction, interconnection and remote batch, all of which will more than triple.

From 1974 to 1979, keyboard revenues will jump from $700 million to $2.125 billion, disk/tape from $550 million to $1.375 billion and memory from $250 million to $500 million, the report said.

Printers should grow from $150 million to $450 million, remote batch from $150 million to $550 million and graphics from $150 million to $300 million; interconnect and autotransaction each will grow from $100 million to $375 million from 1974 to 1979.

The "other" category will double from $150 million to $300 million, the report said.

Breaking the firms into categories such as OEM-only sales, end user sales – both nonkeyboard and keyboard, plug-compatible manufacturers and "unique," IDC found the six firms in the OEM-only group averaged an 11.9% profit percentage of revenues, with all companies profitable in 1974.

The second most profitable group consisted of nine firms that have nonkeyboard products and sell to end users. The average percent of profit was 5.5%. Two of them, Docutel and Lundy, sustained losses in 1974.

A third group, with keyboard products selling to end users, included 10 firms with an average profitability of 3.1%. Sycor was the leader with 8%, followed by Datapoint, 7%; Incoterm, 6.6%; MSI, 5.9%; General Computer, 4%; Entrex, 1.8%; Decision Data, 1.7%; Inforex, .6% and Computer Machinery Corp. and Hazeltine.

In the plug-compatible area, seven of the 13 firms lost money, and none of the firms appeared in the high profitability group.

The average profit was 2.4%, boosted by Storage Technology Corp.'s 7% earnings.

The average profit is overstated, IDC observes, since those firms which lost money were figured at a 0% profit rather than a negative figure. If the magnitude of loss were included, this group would likely have had an average loss, the study remarked.

The group of multiproduct, nonplug-compatible firms was comprised of six firms that averaged 2% profit, an average dragged down by Mohawk's poor performance.

Excluding Mohawk, the group averaged 4.2% profit.

# Wescon to Examine 'Next Thousand Days'

SAN FRANCISCO – A view of "Electronics in the Next Thousand Days" will be presented to attendees at the Western Electronic Show and Convention (Wescon) Sept. 16-19 in the San Francisco Civic Auditorium.

Over 32 sessions will focus on topics in the areas of applications, management, marketing and a diverse number of subjects under the category of "survey."

### Micros On Stage

Microcomputers will again be a topic of several Wescon sessions, including how to get started in microcomputers, hardware and software support, new developments in design aids, logic analyzers and recorders, applications and use in medical instrumentation.

Communications-oriented sessions will examine "Synchronous Data Link Control – Teleprocessing Tyranny or Plug-Compatible Progress?" It will feature both users and manufacturers, as well as a session on communications satellite systems.

Other technically oriented sessions will focus on instrument interfacing with the Institute of Electrical and Electronics Engineers' (IEEE) standard bus and laser detection and ranging devices.

Attendees can also consider selection of a printer for a minicomputer or microcomputer system, automatic testing in the manufacturing process and electronic identification systems.

In the marketing arena, sessions will look at "Engineering vs. Purchasing: The Limits of Responsibility" and "Fielding a Winning Sales Team."

Sessions in the management area will include discussions on employment, stock ownership, plans for a high technology company and "Recipes for Success in the International Business Cookbook."

There will also be a session on "Promoting Women? What's the Problem?"

The sessions will convene at 10 a.m. and 1:30 p.m. beginning Tuesday morning and ending Friday morning.

Brooks Hall, location of the exhibits, is open 9:30 a.m. to 5 p.m. Tuesday through Thursday and 9:30 a.m. to 4 p.m. Friday.

In addition to the 32 sessions, there will be two special-fee seminars at the Towne-house Hotel Sept. 17 and 18 on "Converting Your Ideas Into a Profitable Business" and "How to Start and Finance a New Business," respectively. The fee for each day-long seminar is $50.

At a luncheon Tuesday, Daniel A. McMillan III, publisher of *Electronics*, will deliver the keynote address, giving an overview of electronics and the marketplace in the next thousand days.

On Thursday, the 21st annual Distributor-Manufacturer-Representative Conference will be held at the St. Francis Hotel, providing a conference within a conference.

The registration fee for Wescon is $5. It is sponsored by the San Francisco Bay Area Council and Los Angeles Council of the IEEE and the Northern and Southern California Chapters of the Electronic Representatives Association.

Further information can be obtained from Wescon at 3600 Wilshire Blvd., Los Angeles, Calif. 90010.

# *Interdata Expands Terminal Group*

OCEANPORT, N.J. – Interdata, Inc. has expanded its Terminal Products Group into a business unit as a result of the acceptance of its Carousel product line, according to Daniel Sinnott, Interdata president.

James R. Folts, formerly director of product marketing, has been named general manager of the unit.

Folts said he expects monthly production of the 30 char./sec Carousel printer units to reach several hundred in 1976 and employment at the Randolph, N.J., plant to reach 100.

"We expect the terminal market to grow at a 50% annual rate," Folts said.

"Creating this separate business unit reflects our plan to serve that market aggressively. The Carousel is the first in a planned comprehensive family of terminal-oriented devices," he added.

# Modcomp Gets Second Nasa Pact, Restructures Operations Group

FORT LAUDERDALE, Fla. – Modular Computer Systems, Inc. (Modcomp) has received its second large contract in recent months from the National Aeronautical and Space Administration (Nasa), reorganized its operations group to better handle large network orders and laid off about 40 people in "redundant jobs."

The newest pact with Nasa calls for 73 Modcomp II/25 systems, valued at over $4 million, over a 21-month period. The systems will join other Modcomp systems at Nasa's Jet Propulsion Laboratory performing data handling and processing functions for the deep space network.

Modcomp was selected recently to provide systems for the Launch Processor System for the upcoming Space Shuttle program.

The restructuring creates divisions in manufacturing and systems. Each area is a separate cost center reporting to Robert G. DiStefano, who was named vice-president of operations.

The move was in response to an increased demand for large networks of systems, according to Kenneth G. Harple, Modcomp president.

"Under the new organization, Modcomp will be better able to meet the demand for large, complex network and systems configurations without impacting the small systems business which has been primarily responsible for the company's spectacular growth during the past five years," he said.

The Manufacturing Division supplies standard products to end users and to the Systems Division, which is responsible for all systems engineering and special software as well as quality control.

The consolidation of about 40 jobs is an effort to maintain a profit level in the third quarter, a spokesman said.

# Lessors See More Agency Orders

*(Continued from Page 27)*

so, we're going to get some of that business."

Benton added, however, that "as an industry, we'll have to wait and see before really making a judgment. Oftentimes what GSA says and what the agencies actually do are way out of synchronization."

### No Sole Sourcing

David Pappert, Itel's vice-president and regional manager for federal marketing, said "we're delighted with this contract.

"For the first time, agencies won't have the alternative of sole sourcing entire computer systems off the federal supply schedule. We're also delighted that IBM's 8% discount, which worked to the third parties' disadvantage, will now be eliminated," he added.

Terry Miller, president of Government Sales Consultants, Inc., a firm that offers consulting services and seminars on DP procurement, praised GSA for not bending to agency pressure to let IBM submit a contract for new equipment after the deadline.

"GSA did a good job negotiating," Miller said, "certainly as well as anyone could have expected for the spot it was in."

"It had a huge base of IBM equipment to protect, but it certainly wouldn't have been fair to the other vendors not to penalize IBM for failing to get their bid in on time," he said.

### GSA Wins

Miller pointed out that, when push comes to shove, GSA can and has imposed its will over IBM.

One example Miller cited was the fixed-price option clause issue back in 1967-68. At that time, GSA wrote a regulation requiring vendors to estimate and contract for five- and six-year systems lives and provide maintenance at a fixed price over that period of time, he explained.

After initially objecting to the terms, IBM complied.

### 'Egg on Its Face'

Benton, on the other hand, thinks GSA came out of this "with a little egg on its face." As he sees it, "GSA looked pretty silly when it backed down on its original deadline on the contract and had to continue to negotiate past the deadline.

"IBM, in effect, told GSA, 'We'll close you down. Send back your gear.' IBM is so powerful it could just about do that if it wanted to," he said.

While IBM has only 20% to 25% of the government's machines at the moment, those 370s "are going in by the truck load, and IBM had GSA in a very difficult position," Benton added.

Regardless of who actually signs agency system contracts, all agreed it would be IBM that wins the business in the end because third-party lessors have to buy the large 370 systems from IBM anyway. "So IBM gets cash out front, which will surely increase its earnings this year," Benton said.

### Contract 'No Bargain'

As for the contract itself, Miller observed "it's really no bargain. After Jan. 1, the government will be paying regular commercial prices for all its leased systems as well as for maintenance.

"If individual agencies go to third-party maintenance and leasing firms where the equipment is available, they will get better deals.

"Unfortunately, that won't be possible in the case of 370/168s because nobody's selling them but IBM," he said.

IBM did give the government a 1% discount in the form of a $2.2 million special purchase option credit fund to use against the purchase price of machines agencies may wish to convert from rental to purchase, according to Miller, but IBM has included similar credit option funds in its annual federal supply contract in the past.

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# Burroughs Gives Demonstration Of Pepe System

PAOLI, Penn. – Major portions of the Burroughs' Parallel Element Processing Ensemble (Pepe) system were recently demonstrated here to members of the U.S. Ballistic Missile Defense Advanced Technology Center and other government representatives.

The hardware portion of the Pepe system, being developed by Burroughs Federal and Special Systems Group under subcontract to System Development Corp., is valued at over $6 million.

The system architecture includes three control units generating instructions for multiple processing elements which operate in parallel to achieve high-speed computations required for ballistic missile defense applications, according to Burroughs.

Delivery and installation of the complete Pepe system is scheduled for 1976.

# Orders & Installations

The Department of Chemistry at Revelle College at the University of California has ordered a V72 from Varian Data Machines. The system will control a centralized disk storage facility sharable by a network of laboratory minicomputers.

Ramco International, Inc. has installed a "Real-Time" conversational program from Grumman Data Systems Corp. to be used for inventory control of commercial airline parts and equipment.

Acts Computing has ordered Peripherals General, Inc.'s Honeywell/GE-compatible Disc Storage Systems to replace its current Honeywell equipment.

Ferry Morse, Inc. has ordered a Univac 90/30 to handle inventory control, forecasting, order entry, accounting and billing at the seed distributor's headquarters.

R.T. French has purchased rights to use the Adaptable Data Base System (Adabas) from Software AG.

Five university members of the Mid-Illinois Computer Cooperative will use a Control Data Corp. Cyber 70 Model 72 computer system installed at Southern Illinois University in Edwardsville.

American Express, Inc. has ordered 300 additional Addressograph Multigraph Co. uter Access Terminal Systems (Amcat). When installed, American Express' "Centurion" network will have 1,300 terminals.

Global Associates, a logistics support service group for U.S. government agencies, has installed a Univac 90/30.

Richmond College in Staten Island, N.Y. has installed a Burroughs B1726 system to be used for administrative operations in addition to student records and registration.

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**Monrovia, Calif. 91016**

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## SYSTEMS PROGRAMMER

Large corp seeks professional with IBM OS/MVT and OS/VS 2 exp. Will install operating systems, assist in T.P. design, data base planning and provide technical support to DP staff. Salary to $22,000. Fee paid.

**Contact Stan Durbas**

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**OS Systems Programmer**

The University of New Mexico Computing Center has an opening for an experienced OS Systems Programmer. Configuration: IBM S/360 model 67, 2048K; running OS-MVT with HASP. Major job responsibilities: generate, maintain, modify, document and consult (all on OS). Requirements: Bachelors Degree, at least 3 years programming experience (one year of which consists of working as an OS Systems Programmer), knowledge of 360 architecture, assembler language and two high level languages. Starting salary range: $14,123-$17,014 per year. Send resume and salary requirements to: Director, Computer Center, University of New Mexico, Albuquerque, N. Mexico 87131.

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Columbus, Ohio, 43206
**DALLAS**
Data Processing Careers
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Detroit, Michigan, 48202
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Hartford, Connecticut, 06105
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The Computer Resources Group Agency, Inc.
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Minimum prerequisites include: a baccalaureate degree with emphasis in data processing, minimum of three years of experience with business systems design, a knowledge of data base techniques, experience with both on-line and batch processing, experience with Univac hardware is desirable.

Salary range: $15,235 to $17,219 with excellent fringe benefits.

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BSEE or Computer Science degree desirable with at least 2 years experience in digital computer maintenance and must be familiar with a variety of computer programming languages.

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BS or advanced degree in EE, Physics, Math or Computer Science, with a minimum of 12 years experience in computer development, including digital computer design; experience in and familiarity with microprogramming, assembly and systems software; performance of systems trade studies to determine optimum systems required to fulfill requirements of specific market; configuring commercial systems for the data processing/data entry market.

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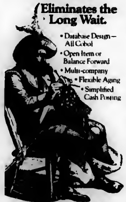

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## ...Toward the Bottom Line

Mohawk Data Sciences has reached an agreement in principle with a group of banks for a revolving credit agreement that could reach up to $102.5 million. Under the agreement, which would replace one expiring Oct. 31, the banks would make available a multicurrency borrowing up to $102.5 million initially, declining to $83 million at the end of May 1977.

$$$

Decision Data Computer has arranged a $28 million long-term debt financing program with five banks. Proceeds will finance a domestic leasing subsidiary, retire short-term bank debt and general corporate purposes.

$$$

Nashua decreased its debt in the first half of the year by $5.6 million for accounts receivables and $19.6 million for inventory.

$$$

Growth projections at Hewlett-Packard (HP) call for employment to nearly double by 1980, barring unforeseen difficulties, said John Doyle, corporate development director. Minority employment at HP has grown from 11% to 16% in the past five years, said Ray Wilbur, vice-president of personnel.

$$$

Dividend time . . . Automatic Data Processing raised the annual rate of its dividends to 40 cents a share from 20 cents a share and will pay 10 cents on a quarterly basis on Oct. 1 to shareholders of record Sept. 5.

# Net Income for Nine Months Rises 8% at HP

PALO ALTO, Calif. – Hewlett-Packard Co.'s third-quarter earnings were off nearly 12% compared with year-ago figures, but earnings rose 8% in the nine months.

The rate of international orders outpaced domestic orders, rising 18% on the nine months compared with 1.5% for domestic.

"Increasing pressure on profit margins, particularly in pocket-sized calculators, plus order and shipment rates lower than we had anticipated in several other product categories, resulted in the decline in earnings for the period," President William R. Hewlett said.

Revenues for the third quarter ended July 31 totaled $245.9 million, compared with $233.6 million for the year-ago period.

Earnings fell to $20.3 million or 73 cents a share from nearly $23 million or 84 cents a share during the 1974 third quarter.

Revenues for the nine months amounted to $706.3 million, a 10.5% increase over $639.2 million in the year-ago period.

Earnings rose 8% to $62.7 million or $2.27 a share. This compares with earnings of nearly $58 million or $2.14 a share during the first nine months of last year.

Incoming orders for the quarter rose 6.1% to $261.9 million compared with $246.8 million booked in the corresponding period of 1974.

For the nine-month period, orders totaled $753.2 million, up 9.2% from a year ago when orders were $689.8 million.

# Pertec Reports Record '75 Profits

EL SEGUNDO, Calif. – Pertec Corp. stemmed the tide of decreasing earnings with record revenues and profits for the year ended June 27. Revenues were up 46% while earnings rose 120% over those of last year, and the fourth quarter set records.

For the year, revenues rose to $48 million compared with $32.9 million last year.

Earnings totaled $2.8 million or 90 cents a share compared with $1.3 million or 41 cents a share in 1974, when there was a $1 million charge from discontinued printer operations.

During the fourth quarter, revenues reached $13.5 million compared with $9.5 million in the year-ago period, while earnings rose to $956,000 or 31 cents a share compared with $880,000 or 29 cents a share.

The 1974 results include $1.2 million from the sale of the firm's computer-output microfilm operation.

"This year's achievement marks a significant turnaround after three years of progressively declining profits," said President Ryal R. Poppa.

"Our Business Systems Division, which was unprofitable last year, recorded dramatic increases in both revenues and profits. Our Peripheral Equipment Division experienced a modest growth rate of 12% which was well below their anticipated revenues, yet was able to achieve almost 100% of their profit expectations," he said.

# Sales Surpass Projections at MAI

NEW YORK – Management Assistance, Inc. (MAI) scored record earnings and revenues for the third quarter and nine months with revenues ahead of the projected 15% to 20% growth rate.

Sales of Basic/Four systems in nine months grew 47% over a year ago to over $30 million. Backlog for the Basic/Four exceeded $14 million, compared with $11 million at the start of the fiscal year.

Earnings for the third quarter, ended June 20, were $1.9 million or 7 cents per share compared with $1.2 million or 4 cents per share for the same period last year.

Revenues for the quarter totaled $24.3 million, 21% over the $20 million for last year's third quarter.

Tax credits in the 1975 and 1974 periods amounted to $818,000 and $652,000, respectively.

In the nine months, MAI earned $4.1 million or 14 cents a share compared with $1.7 million or 6 cents per share last year.

The nine-month period of 1975 reflects a credit of $928,000 after deducting a $592,000 write-off of a receivables from Potter Instrument Co., while in 1974 there was a $1.1 million tax credit.

Revenues rose 23% in the nine months to $69.1 million compared with $55.9 million for the same period last year.

Raymond P. Kurshan, chairman and president, said "Both earnings and revenues for the 1975 third quarter exceeded those of the first and second quarters."

"The improvements came from our domestic and foreign activities in sales of Basic/Four systems and in DP equipment service and maintenance," he said.

"MAI's achievements to date confirm our earlier projections that both revenues and net income will continue to rise and our overall performance for the year will set an all-time record," said Kurshan.

# REI Improves Nine-Month Earnings Despite Special Credit Last Year

DALLAS – Despite a $2 million special credit last year, Recognition Equipment, Inc. (REI) managed to better earnings during the nine months, when earnings reached $2.1 million or 36 cents a share compared with $1.4 million or 26 cents a share in the year-ago period.

Revenues for the nine months rose to $42.5 million compared with $28.6 million last year. The $42.5 million includes $6.9 million, the value of a Trace system contract installed at First National City Bank. The company said it has essentially no profit impact from these revenues.

However, during the third quarter, although REI's operating income rose to $509,000 compared with a loss of $167,000 in the year-ago period, earnings were less than a year ago.

### Earned $733,000

The firm earned $733,000 or 12 cents a share, including a $224,000 tax credit, compared with $2.1 million or 40 cents a share in the year-ago period, when there was the $2 million gain on restructuring convertible subordinated notes and $252,000 in tax credits.

Revenues for the three months rose to $13.5 million compared with $9.5 million in the year-ago period.

As of July 31, the backlog of firm orders totaled $41.5 million, including $858,000 for optical character recognition wands on an if-sold basis, up from $22.4 million last year.

# Expansions

**Honeywell** will establish a facility to package integrated circuits located at the Las American Industrial Park in Chihuahua, Mexico.

**Burroughs Corp.** has purchased an 110,000 sq ft plant for the manufacture and engineering of its Series S document-handling systems in Wayne Township, Mich. The plant will provide the space needed for expansion of the Series S program and will provide additional space at the Plymouth plant for expansion of the Series L and Series TC programs.

**Dataproducts Corp.** has opened a 35,000 sq ft addition to assemble and manufacture printers for the European market in Dublin, Ireland.

**Control Data Corp.** has begun construction on its first European Cybernet computer center which will house two CDC Cyber 70 Model 73s and two IBM 370/158s. It will be located in Brussels, Belgium.

**Versatec** has moved to larger facilities in Santa Clara at the intersection of Kifer Road and Bowers Ave. The $4 million building of over 100,000 sq ft will house up to 500 employees.

**Tymshare, Inc.** has moved into larger headquarter facilities at 20705 Valley Green Drive, Cupertino, Calif. 95014.

**Entrex, Inc.** has leased space at 10010 Santa Monica Blvd. in Los Angeles for a sales and training office.

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# Earnings Reports

### COMPUTER SCIENCES
Three Months Ended June 27

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.11 | $.04 |
| Revenue | 50,367,000 | 39,733,000 |
| Earnings | 1,524,000 | 585,000 |

### INTEL
Three Months Ended June 30

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.52 | $1.00 |
| Revenue | 31,501,000 | 38,223,000 |
| Earnings | 3,813,000 | 6,701,000 |
| 6 Mo Shr | 1.06 | 1.99 |
| Revenue | 81,866,000 | 68,709,000 |
| Earnings | 7,305,000 | 13,304,000 |

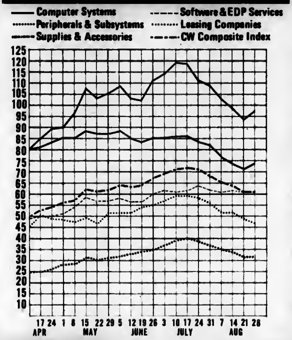
### COMPUTER INVESTORS GROUP
Year Ended March 31

| | 1975 | 1974 |
|---|---|---|
| Revenue | $28,682,000 | $23,231,000 |
| Spec Cred | 306,000 | ..... |
| Loss | 4,230,000 | 1,812,000 |

### WAVETEK
Three Months Ended July 5

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.14 | $.13 |
| Revenue | 2,434,300 | 2,368,700 |
| Earnings | 119,700 | 108,000 |
| 9 Mo Shr | .29 | .53 |
| Revenue | 7,398,100 | 7,692,000 |
| Earnings | 247,600 | 454,300 |

COMPUTERWORLD Computer Stocks Trading Indexes



### DATA CARD
Three Months Ended June 28

| | e1975 | b1974 |
|---|---|---|
| Shr Ernd | $.17 | $.17 |
| Revenue | 3,184,000 | 1,929,000 |
| Earnings | 263,000 | 261,000 |

e-Includes operations of Troy division acquired in May. b-Restated to reflect accounting changes.

### DATA DISC
Three Months Ended July 4

| | 1976 | 1974 |
|---|---|---|
| Shr Ernd | $.03 | $.02 |
| Revenue | 1,812,000 | 2,564,000 |
| Earnings | 30,000 | 20,000 |
| 6 Mo Shr | ..... | .19 |
| Revenue | 3,499,000 | 4,949,000 |
| Earnings | (66,000) | 195,000 |

### LITRONIX
Three Months Ended June 29

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.10 | ..... |
| Revenue | 13,332,000 | $8,698,000 |
| Earnings | 252,000 | (35,000) |
| 6 Mo Shr | .17 | .02 |
| Revenue | 23,663,000 | 15,446,000 |
| Earnings | 433,000 | 41,000 |

### MACRODATA
Three Months Ended June 30

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | ...... | $.24 |
| Revenue | $2,877,471 | 3,258,257 |
| Earnings | (56,837) | 238,530 |
| 6 Mo Shr | .11 | .46 |
| Revenue | 5,885,980 | 6,258,333 |
| Earnings | 117,887 | 416,919 |

### TALLY
Three Months Ended June 29

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.09 | $.06 |
| Revenue | 5,439,000 | 4,300,000 |
| Tax Cred | 20,000 | 41,000 |
| Earnings | 205,000 | 162,000 |
| 6 Mo Shr | .10 | .11 |
| Revenue | 9,871,000 | 8,454,000 |
| Tax Cred | 55,000 | 73,000 |
| Earnings | 233,000 | 287,000 |

### MODULAR COMPUTER SYSTEMS
Three Months Ended June 30

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.20 | $.18 |
| Revenue | 9,034,000 | 6,056,000 |
| Earnings | 594,000 | 485,000 |
| 6 Mo Shr | .38 | .32 |
| Revenue | 17,706,000 | 11,012,000 |
| Tax Cred | ..... | 188,000 |
| Earnings | 1,141,000 | 1,076,000 |

# Computerworld Sales Offices

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**Sales Administrator:**
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# Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 27, 1975

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

### COMPUTER SYSTEMS

| EXCH | | PRICE: 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| N | BURROUGHS CORP | 62-109 | 88 5/8 | +1 1/4 | +1.4 |
| O | COMPUTER AUTOMATION | 2- 10 | 8 | + 1/2 | +6.6 |
| N | CONTROL DATA CORP | 11- 23 | 16 1/4 | +1 | +6.5 |
| N | DATA GENERAL CORP | 10- 38 | 27 1/4 | +1 5/8 | +6.3 |
| O | DATAPOINT CORP | 6- 26 | 17 3/4 | +1 1/4 | +7.5 |
| O | DIGITAL COMP CONTROL | 1- 4 | 3 1/4 | 0 | 0.0 |
| N | DIGITAL EQUIPMENT | 46-122 | 110 5/8 | +4 1/8 | +3.8 |
| N | ELECTRONIC ASSOC. | 2- 3 | 2 3/8 | + 1/8 | +5.5 |
| A | ELECTRONIC ENGINEER. | 5- 13 | 8 5/8 | + 3/8 | +4.5 |
| N | FOXBORO | 23- 42 | 30 3/4 | + 3/4 | +2.5 |
| O | GENERAL AUTOMATION | 6- 14 | 6 7/8 | -1 1/4 | -15.3 |
| O | GRI COMPUTER CORP | 1- 1 | 5/8 | + 1/8 | +25.0 |
| N | HEWLETT-PACKARD CO | 58-120 | 92 1/2 | -6 5/8 | -6.6 |
| N | HONEYWELL INC | 22- 43 | 28 1/8 | +1 1/4 | +4.6 |
| N | IBM | 158-224 | 181 | +4 1/2 | +2.5 |
| O | MEMOREX | 1- 10 | 7 | - 5/8 | -8.1 |
| O | MICRODATA CORP | 2- 6 | 4 5/8 | + 1/8 | +2.7 |
| O | MODULAR COMPUTER SYS | 5- 19 | 10 1/2 | -1 1/2 | -12.5 |
| N | NCR | 15- 39 | 26 7/8 | +1 1/2 | +5.9 |
| O | PRIME COMPUTER INC | 2- 6 | 5 | 0 | 0.0 |
| N | PERKIN-ELMER | 16- 30 | 23 1/2 | +1 3/8 | +6.2 |
| N | RAYTHEON CO | 26- 59 | 49 3/4 | +2 1/8 | +4.4 |
| N | SINGER COMPANY | 10- 17 | 12 1/4 | + 7/8 | +7.6 |
| N | SPERRY RAND | 26- 49 | 40 1/4 | + 1/2 | +1.2 |
| A | SYSTEMS ENG. LABS | 1- 5 | 3 1/8 | 0 | 0.0 |
| O | ULTIMACC SYSTEMS INC | 1- 6 | 5 5/8 | 0 | 0.0 |
| N | VARIAN ASSOCIATES | 7- 15 | 13 3/8 | + 7/8 | +7.0 |
| N | WANG LABS. | 7- 17 | 11 3/4 | + 1/4 | +2.1 |
| N | XEROX CORP | 51- 86 | 58 | +5 | +9.4 |

### LEASING COMPANIES

| EXCH | | PRICE: 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | COMDISCO INC | 1- 5 | 3 3/8 | 0 | 0.0 |
| A | COMMERCE GROUP CORP | 2- 4 | 3 | 0 | 0.0 |
| A | COMPUTER INVSTRS GRP | 1- 2 | 3/4 | 0 | 0.0 |
| M | DATRONIC RENTAL | 1- 1 | 1/2 | 0 | 0.0 |
| A | DCL INC | 1- 1 | 1/2 | 0 | 0.0 |
| N | DPF INC | 3- 6 | 4 1/2 | - 1/8 | -2.7 |
| O | EDP RESOURCES | 1- 2 | 1 | 0 | 0.0 |
| A | GRANITE MGT | 1- 5 | 3 1/2 | + 1/4 | +7.6 |
| A | GREYHOUND COMPUTER | 2- 3 | 2 7/8 | 0 | 0.0 |
| A | ITEL | 3- 9 | 5 7/8 | + 1/8 | +2.1 |
| N | LEASCO CORP | 4- 8 | 6 | - 1/8 | -2.0 |
| O | LEASPAC CORP | 1- 1 | 1/4 | 0 | 0.0 |
| O | LECTRO MGT INC | 1- 1 | 1/8 | 0 | 0.0 |
| O | NRG INC | 1- 4 | 2 3/8 | - 3/8 | -13.6 |
| A | PIONEER TEX CORP | 2- 7 | 5 | - 1/4 | -4.7 |
| A | ROCKWOOD COMPUTER | 1- 1 | 1/4 | - 3/8 | -60.0 |
| N | U.S. LEASING | 8- 14 | 8 7/8 | + 5/8 | +7.5 |

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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(1) TO NEAREST DOLLAR

### SOFTWARE & EDP SERVICES

| EXCH | | PRICE: 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | ADVANCED COMP TECH | 1- 1 | 1 | 0 | 0.0 |
| A | APPLIED DATA RES. | 1- 13 | 1 3/4 | 0 | 0.0 |
| N | AUTOMATIC DATA PROC | 29- 65 | 51 5/8 | +1 5/8 | +3.2 |
| O | BRANDON APPLIED SYST | 1- 1 | 1/4 | 0 | 0.0 |
| O | CENTRAL DATA SYSTEMS | 3- 7 | 6 1/2 | 0 | 0.0 |
| O | COMPUTER DIMENSIONS | 2- 6 | 4 | - 1/4 | -5.8 |
| O | COMP ELECTION SYSTMS | 3- 6 | 5 1/4 | 0 | 0.0 |
| O | COMPUTER HORIZONS | 1- 1 | 3/4 | - 1/8 | -14.2 |
| O | COMPUTER NETWORK | 1- 3 | 2 3/8 | 0 | 0.0 |
| N | COMPUTER SCIENCES | 2- 6 | 4 1/2 | + 3/8 | +9.0 |
| O | COMPUTER TASK GROUP | 1- 1 | 5/8 | 0 | 0.0 |
| O | COMPUTER USAGE | 2- 4 | 2 3/8 | + 1/8 | +5.5 |
| O | CONSHARE | 3- 4 | 2 3/4 | - 1/8 | -4.3 |
| O | DATATAB | 1- 2 | 1 3/4 | 0 | 0.0 |
| A | ELECT COMP PROG | 1- 1 | 1/4 | 0 | 0.0 |
| N | ELECTRONIC DATA SYS. | 17- 28 | 18 1/4 | + 7/8 | +5.0 |
| O | INFORMATIONAL INC | 1- 1 | 1/8 | 0 | 0.0 |
| O | IPS COMPUTER MARKET. | 1- 1 | 3/4 | 0 | 0.0 |
| O | KEANE ASSOCIATES | 2- 3 | 2 1/4 | 0 | 0.0 |
| O | KEYDATA CORP | 2- 3 | 2 1/2 | - 1/8 | -4.7 |
| O | LOGICON | 3- 5 | 3 5/8 | 0 | 0.0 |
| A | MANAGEMENT DATA | 1- 3 | 1 3/4 | - 3/8 | -17.6 |
| O | NATIONAL CSS INC | 6- 14 | 12 | +1 3/4 | +17.0 |
| O | NATIONAL COMPUTER CO | 1- 1 | 1/8 | 0 | 0.0 |
| A | ON LINE SYSTEMS INC | 5- 17 | 13 1/4 | + 1/2 | +3.9 |
| N | PLANNING RESEARCH | 2- 6 | 3 7/8 | 0 | 0.0 |
| O | PROGRAMMING & SYS | 1- 1 | 5/8 | 0 | 0.0 |
| O | RAPIDATA INC | 2- 5 | 3 5/8 | + 1/8 | +3.5 |
| O | REYNOLDS & REYNOLD | 10- 24 | 11 | -1 | -8.3 |
| O | SCIENTIFIC COMPUTERS | 1- 1 | 1 | 0 | 0.0 |
| O | SIMPLICITY COMPUTER | 1- 1 | 3/4 | 0 | 0.0 |
| O | TYMSHARE INC | 7- 21 | 16 3/8 | +1 3/8 | +9.1 |
| A | URS SYSTEMS | 2- 4 | 3 | - 1/2 | -14.2 |
| N | WYLY CORP | 2- 4 | 3 | 0 | 0.0 |

### PERIPHERALS & SUBSYSTEMS

| EXCH | | PRICE: 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| N | ADDRESSOGRAPH-MULT | 4- 9 | 6 1/2 | + 7/8 | +15.5 |
| O | ADVANCED MEMORY SYS | 1- 7 | 4 | + 5/8 | +18.5 |
| N | AMPEX CORP | 3- 7 | 5 1/8 | + 3/8 | +7.8 |
| O | ANDERSON JACOBSON | 1- 3 | 1 7/8 | - 1/2 | -21.0 |
| O | BEEHIVE MEDICAL ELEC | 1- 5 | 3 | - 1/8 | -4.0 |
| A | BOLT,BERANEK & NEW | 5- 13 | 10 | + 7/8 | +9.5 |
| N | BUNKER-RAMO | 4- 8 | 4 5/8 | 0 | 0.0 |
| A | CALCOMP | 4- 7 | 4 | - 1/4 | -5.8 |
| O | CARTRIDGE MEMORIES | 3- 5 | 3 3/4 | - 1/8 | -3.2 |
| N | CENTRONICS DATA COMP | 7- 25 | 15 1/4 | - 3/4 | -4.6 |
| O | CODEX CORP | 15- 38 | 29 1/4 | +2 3/4 | +10.3 |
| O | COGNITRONICS | 1- 2 | 1 1/8 | 0 | 0.0 |
| O | COMPUTER COMMUN. | 1- 2 | 1 | 0 | 0.0 |
| O | COMPUTER CONSOLES | 3- 7 | 4 1/4 | -1 1/4 | -22.7 |
| A | COMPUTER EQUIPMENT | 1- 2 | 1 3/4 | + 1/4 | +16.6 |
| O | COMPUTER MACHINERY | 1- 2 | 1 3/4 | + 1/8 | +7.6 |
| O | COMPUTER TRANSCEIVER | 1- 2 | 1 1/8 | 0 | 0.0 |
| O | CONTEN | 2- 5 | 3 1/2 | - 1/4 | -6.6 |
| N | CONRAC CORP | 12- 23 | 15 1/8 | -1 3/4 | -10.3 |
| O | DATA ACCESS SYSTEMS | 1- 3 | 2 | 0 | 0.0 |
| O | DATA 100 | 5- 16 | 9 3/8 | + 1/4 | +2.7 |
| A | DATA PRODUCTS CORP | 2- 6 | 3 5/8 | + 1/8 | +3.5 |
| O | DATA TECHNOLOGY | 1- 3 | 1 3/4 | 0 | 0.0 |
| O | DATUM INC | 1- 2 | 1 3/8 | - 1/8 | -5.3 |
| O | DECISION DATA COMPUT | 4- 7 | 4 3/4 | + 1/2 | +11.7 |
| O | DELTA DATA SYSTEMS | 1- 1 | 1/4 | 0 | 0.0 |
| O | DIVAN CONTROLS | 1- 1 | 3/4 | 0 | 0.0 |
| N | ELECTRONIC M & M | 1- 3 | 1 3/4 | + 1/8 | +7.6 |
| O | FABRI-TEK | 1- 1 | 1 | 0 | 0.0 |
| O | GENERAL COMPUTER SYS | 1- 2 | 1 1/4 | 0 | 0.0 |
| N | HAZELTINE CORP | 3- 6 | 4 | - 1/4 | -5.8 |
| N | HARRIS CORP | 18- 28 | 23 | +1 | +4.5 |
| A | INCOTERM CORP | 3- 12 | 9 1/8 | - 1/4 | -2.6 |
| O | INFOREX INC | 2- 5 | 2 7/8 | 0 | 0.0 |
| O | INFORMATION INTL INC | 4- 14 | 11 3/4 | - 3/8 | -3.0 |
| A | LUNDY ELECTRONICS | 3- 3 | 2 7/8 | 0 | 0.0 |
| O | MANAGEMENT ASSIST | 1- 1 | 5/8 | 0 | 0.0 |
| A | MILGO ELECTRONICS | 8- 24 | 15 5/8 | + 1/8 | +0.8 |
| N | MOHAWK DATA SCI | 1- 5 | 2 7/8 | + 3/8 | +15.0 |
| O | OPTICAL SCANNING | 1- 3 | 3 | 0 | 0.0 |
| O | PENRIL CORP | 2- 2 | 1 1/2 | - 1/8 | -7.6 |
| O | PERTEC CORP | 2- 8 | 4 3/4 | -1 | -17.3 |
| A | POTTER INSTRUMENT | 2- 2 | 1 3/4 | 0 | 0.0 |
| O | PRECISION INST. | 1- 1 | 3/4 | 0 | 0.0 |
| O | QUANTOR CORP | 2- 6 | 4 5/8 | + 1/8 | +2.7 |
| O | RECOGNITION EQUIP | 2- 9 | 6 1/8 | + 1/8 | +2.0 |
| N | SANDERS ASSOCIATES | 3- 11 | 6 7/8 | + 3/4 | +12.2 |
| O | SCAN DATA | 1- 3 | 1 3/4 | - 1/8 | -6.6 |
| O | STORAGE TECHNOLOGY | 6- 17 | 12 1/4 | +1 | +8.5 |
| O | SYCOR INC | 5- 15 | 13 3/4 | +1 1/2 | +12.2 |
| O | T BAR INC | 3- 6 | 5 3/8 | + 1/8 | +2.3 |
| O | TALLY CORP. | 1- 5 | 3 1/8 | 0 | 0.0 |
| O | TEC INC | 1- 4 | 3 | 0 | 0.0 |
| N | TEKTRONIX INC | 15- 41 | 32 | -1 1/4 | -3.7 |
| N | TELEX | 1- 3 | 2 1/8 | - 1/8 | -5.5 |
| O | WANGCO INC | 4- 9 | 5 7/8 | + 1/8 | +2.1 |
| O | WILTEK INC | 1- 4 | 2 1/2 | 0 | 0.0 |

### SUPPLIES & ACCESSORIES

| EXCH | | PRICE: 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | BALTIMORE BUS FORMS | 4- 5 | 4 1/2 | + 1/4 | +5.8 |
| A | BARRY WRIGHT | 5- 7 | 6 1/4 | - 1/4 | -3.8 |
| O | CYBERMATICS INC | 1- 1 | 1/2 | 0 | 0.0 |
| A | DATA DOCUMENTS | 29- 42 | 34 | +2 1/8 | +6.6 |
| O | DUPLEX PRODUCTS INC | 12- 25 | 16 | +1 1/8 | +7.5 |
| N | ENNIS BUS. FORMS | 5- 7 | 5 1/8 | - 1/8 | -2.3 |
| O | GRAHAM MAGNETICS | 5- 13 | 8 1/4 | +1 | +13.7 |
| O | GRAPHIC CONTROLS | 8- 21 | 11 1/2 | +1 | +9.5 |
| N | 3M COMPANY | 43- 68 | 53 3/4 | +2 1/4 | +4.3 |
| O | MOORE CORP LTD | 39- 51 | 43 3/4 | +1 1/2 | +3.5 |
| N | NASHUA CORP | 11- 22 | 12 1/4 | + 5/8 | +5.3 |
| O | STANDARD REGISTER | 11- 20 | 15 3/4 | + 1/4 | +1.6 |
| O | TAB PRODUCTS CO | 4- 8 | 5 3/4 | 0 | 0.0 |
| N | UARCO | 17- 24 | 19 3/4 | - 1/4 | -1.2 |
| O | VANIER GRAPHICS CORP | 4- 7 | 4 3/4 | 0 | 0.0 |
| A | WABASH MAGNETICS | 3- 5 | 4 | + 1/8 | +3.2 |
| N | WALLACE BUS FORMS | 15- 25 | 18 1/8 | - 1/4 | -1.3 |

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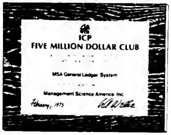

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## ...Toward the Bottom Line

**Mohawk Data Sciences** has reached an agreement in principle with a group of banks for a revolving credit agreement that could reach up to $102.5 million. Under the agreement, which would replace one expiring Oct. 31, the banks would make available a multicurrency borrowing up to $102.5 million initially, declining to $83 million at the end of May 1977.

$$$

**Decision Data Computer** has arranged a $28 million long-term debt financing program with five banks. Proceeds will finance a domestic leasing subsidiary, retire short-term bank debt and general corporate purposes.

$$$

**Nashua** decreased its debt in the first half of the year by $5.6 million for accounts receivables and $19.6 million for inventory.

$$$

Growth projections at **Hewlett-Packard** (HP) call for employment to nearly double by 1980, barring unforeseen difficulties, said John Doyle, corporate development director. Minority employment at HP has grown from 11% to 16% in the past five years, said Ray Wilbur, vice-president of personnel.

$$$

Dividend time . . . **Automatic Data Processing** raised the annual rate of its dividends to 40 cents a share from 20 cents a share and will pay 10 cents on a quarterly basis on Oct. 1 to shareholders of record Sept. 5.

# Net Income for Nine Months Rises 8% at HP

PALO ALTO, Calif. – Hewlett-Packard Co.'s third-quarter earnings were off nearly 12% compared with year-ago figures, but earnings rose 8% in the nine months.

The rate of international orders outpaced domestic orders, rising 18% on the nine months compared with 1.5% for domestic.

"Increasing pressure on profit margins, particularly in pocket-sized calculators, plus order and shipment rates lower than we had anticipated in several other product categories, resulted in the decline in earnings for the period," President William R. Hewlett said.

Revenues for the third quarter ended July 31 totaled $245.9 million, compared with $233.6 million for the year-ago period.

Earnings fell to $20.3 million or 73 cents a share from nearly $23 million or 84 cents a share during the 1974 third quarter.

Revenues for the nine months amounted to $706.3 million, a 10.5% increase over $639.2 million in the year-ago period.

Earnings rose 8% to $62.7 million or $2.27 a share. This compares with earnings of nearly $58 million or $2.14 a share during the first nine months of last year.

Incoming orders for the quarter rose 6.1% to $261.9 million compared with $246.8 million booked in the corresponding period of 1974.

For the nine-month period, orders totaled $753.2 million, up 9.2% from a year ago when orders were $689.8 million.

# Pertec Reports Record '75 Profits

EL SEGUNDO, Calif. – Pertec Corp. stemmed the tide of decreasing earnings with record revenues and profits for the year ended June 27. Revenues were up 46% while earnings rose 120% over those of last year, and the fourth quarter set records.

For the year, revenues rose to $48 million compared with $32.9 million last year.

Earnings totaled $2.8 million or 90 cents a share compared with $1.3 million or 41 cents a share in 1974, when there was a $1 million charge from discontinued printer operations.

During the fourth quarter, revenues reached $13.5 million compared with $9.5 million in the year-ago period, while earnings rose to $956,000 or 31 cents a share compared with $880,000 or 29 cents a share.

The 1974 results include $1.2 million from the sale of the firm's computer-output microfilm operation.

"This year's achievement marks a significant turnaround after three years of progressively declining profits," said President Ryal R. Poppa.

"Our Business Systems Division, which was unprofitable last year, recorded dramatic increeses in both revenues and profits. Our Peripheral Equipment Division experienced a modest growth rate of 12% which was well below their anticipated revenues, yet was able to achieve almost 100% of their profit expectations," he said.

# Sales Surpass Projections at MAI

NEW YORK – Management Assistance, Inc. (MAI) scored record earnings and revenues for the third quarter and nine months with revenues ahead of the projected 15% to 20% growth rate.

Sales of Basic/Four systems in nine months grew 47% over a year ago to over $30 million. Backlog for the Basic/Four exceeded $14 million, compared with $11 million at the start of the fiscal year.

Earnings for the third quarter, ended June 20, were $1.9 million or 7 cents per share compared with $1.2 million or 4 cents per share for the same period last year.

Revenues for the quarter totaled $24.3 million, 21% over the $20 million for last year's third quarter.

Tax credits in the 1975 and 1974 periods amounted to $818,000 and $652,000, respectively.

In the nine months, MAI earned $4.1 million or 14 cents a share compared with $1.7 million or 6 cents per share last year.

The nine-month period of 1975 reflects a credit of $928,000 after deducting a $592,000 write-off of a receivables from Potter Instrument Co., while in 1974 there was a $1.1 million tax credit.

Revenues rose 23% in the nine months to $69.1 million compared with $55.9 million for the same period last year.

Raymond P. Kurshan, chairman and president, said "Both earnings and revenues for the 1975 third quarter exceeded those of the first and second quarters."

"The improvements came from our domestic and foreign activities in sales of Basic/Four systems and in DP equipment service and maintenance," he said.

"MAI's achievements to date confirm our earlier projections that both revenues and net income will continue to rise and our overall performance for the year will set an all-time record," said Kurshan.

# REI Improves Nine-Month Earnings Despite Special Credit Last Year

DALLAS – Despite a $2 million special credit last year, Recognition Equipment, Inc. (REI) managed to better earnings during the nine months, when earnings reached $2.1 million or 36 cents a share compared with $1.4 million or 26 cents a share in the year-ago period.

Revenues for the nine months rose to $42.5 million compared with $28.6 million last year. The $42.5 million includes $6.9 million, the value of a Trace system contract installed at First National City Bank. The company said it has essentially no profit impact from these revenues.

However, during the third quarter, although REI's operating income rose to $509,000 compared with a loss of $167,000 in the year-ago period, earnings were less than a year ago.

### Earned $733,000

The firm earned $733,000 or 12 cents a share, including a $224,000 tax credit, compared with $2.1 million or 40 cents a share in the year-ago period, when there was the $2 million gain on restructuring convertible subordinated notes and $252,000 in tax credits.

Revenues for the three months rose to $13.5 million compared with $9.5 million in the year-ago period.

As of July 31, the backlog of firm orders totaled $41.5 million, including $858,000 for optical character recognition wands on an if-sold basis, up from $22.4 million last year.

# Expansions

**Honeywell** will establish a facility to package integrated circuits located at the Las American Industrial Park in Chihuahua, Mexico.

**Burroughs Corp.** has purchased an 110,000 sq ft plant for the manufacture and engineering of its Series S document-handling systems in Wayne Township, Mich. The plant will provide the space needed for expansion of the Series S program and will provide additional space at the Plymouth plant for expansion of the Series L and Series TC programs.

**Dataproducts Corp.** has opened a 35,000 sq ft addition to assemble and manufacture printers for the European market in Dublin, Ireland.

**Control Data Corp.** has begun construction on its first European Cybernet computer center which will house two CDC Cyber 70 Model 73s and two IBM 370/158s. It will be located in Brussels, Belgium.

**Versatec** has moved to larger facilities in Santa Clara at the intersection of Kifer Road and Bowers Ave. The $4 million building of over 100,000 sq ft will house up to 500 employees.

**Tymahare, Inc.** has moved into larger headquarter facilities at 20705 Valley Green Drive, Cupertino, Calif. 95014.

**Entrex, Inc.** has leased space at 10010 Santa Monica Blvd. in Los Angeles for a sales and training office.

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# Earnings Reports

### COMPUTER SCIENCES
Three Months Ended June 27

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.11 | $.04 |
| Revenue | 60,367,000 | 39,733,000 |
| Earnings | 1,524,000 | 685,000 |

### INTEL
Three Months Ended June 30

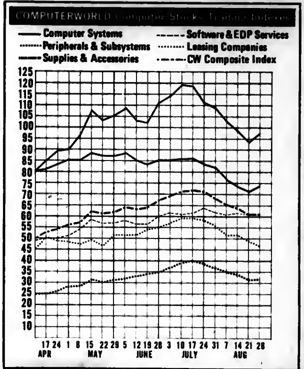
| | 1976 | 1974 |
|---|---|---|
| Shr Ernd | $.52 | $1.00 |
| Revenue | 31,601,000 | 36,223,000 |
| Earnings | 3,613,000 | 6,701,000 |
| 6 Mo Shr | 1.06 | 1.99 |
| Revenue | 61,866,000 | 68,709,000 |
| Earnings | 7,305,000 | 13,304,000 |

### COMPUTER INVESTORS GROUP
Year Ended March 31

| | 1975 | 1974 |
|---|---|---|
| Revenue | $28,682,000 | $23,231,000 |
| Spec Cred | 306,000 | ..... |
| Loss | 4,230,000 | 1,612,000 |

### WAVETEK
Three Months Ended July 6

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.14 | $.13 |
| Revenue | 2,434,300 | 2,366,700 |
| Earnings | 119,700 | 108,000 |
| 9 Mo Shr | .29 | .53 |
| Revenue | 7,398,100 | 7,692,000 |
| Earnings | 247,600 | 454,300 |



### DATA CARD
Three Months Ended June 28

| | a1975 | b1974 |
|---|---|---|
| Shr Ernd | $.17 | $.17 |
| Revenue | 3,184,000 | 1,929,000 |
| Earnings | 263,000 | 251,000 |

a-Includes operations of Troy division acquired in May. b-Restated to reflect accounting changes.

### DATA DISC
Three Months Ended July 4

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.03 | $.02 |
| Revenue | 1,812,000 | 2,564,000 |
| Earnings | 30,000 | 20,000 |
| 6 Mo Shr | ..... | .19 |
| Revenue | 3,499,000 | 4,949,000 |
| Earnings | (66,000) | 195,000 |

### LITRONIX
Three Months Ended June 29

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.10 | ..... |
| Revenue | 13,332,000 | $6,698,000 |
| Earnings | 262,000 | (35,000) |
| 6 Mo Shr | .17 | .02 |
| Revenue | 23,663,000 | 15,446,000 |
| Earnings | 433,000 | 41,000 |

### MACRODATA
Three Months Ended June 30

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | ..... | $.24 |
| Revenue | $2,877,471 | 3,258,257 |
| Earnings | (56,837) | 238,530 |
| 6 Mo Shr | .11 | .46 |
| Revenue | 6,885,980 | 6,258,333 |
| Earnings | 117,887 | 416,919 |

### TALLY
Three Months Ended June 29

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.09 | $.06 |
| Revenue | 5,439,000 | 4,300,000 |
| Tax Cred | 20,000 | 41,000 |
| Earnings | 205,000 | 162,000 |
| 6 Mo Shr | .10 | .11 |
| Revenue | 9,671,000 | 8,454,000 |
| Tax Cred | 65,000 | 73,000 |
| Earnings | 233,000 | 287,000 |

### MODULAR COMPUTER SYSTEMS
Three Months Ended June 30

| | 1975 | 1974 |
|---|---|---|
| Shr Ernd | $.20 | $.18 |
| Revenue | 9,034,000 | 6,056,000 |
| Earnings | 594,000 | 485,000 |
| 6 Mo Shr | .36 | .32 |
| Revenue | 17,706,000 | 11,012,000 |
| Tax Cred | ..... | 186,000 |
| Earnings | 1,141,000 | 1,076,000 |

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# Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 27, 1975

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

### COMPUTER SYSTEMS

| EXCH | | PRICE 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| N | BURROUGHS CORP | 62-109 | 88 5/8 | +1 1/4 | +1.4 |
| O | COMPUTER AUTOMATION | 2- 10 | 8 | + 1/2 | +6.6 |
| N | CONTROL DATA CORP | 11- 23 | 16 1/4 | +1 | +6.5 |
| N | DATA GENERAL CORP | 10- 38 | 27 1/4 | +1 5/8 | +6.3 |
| O | DATAPOINT CORP | 6- 26 | 17 3/4 | +1 1/4 | +7.5 |
| O | DIGITAL COMP CONTROL | 1- 4 | 3 1/4 | 0 | 0.0 |
| N | DIGITAL EQUIPMENT | 46-122 | 110 5/8 | +4 1/8 | +3.8 |
| N | ELECTRONIC ASSOC. | 2- 3 | 2 3/8 | + 1/8 | +5.5 |
| A | ELECTRONIC ENGINEER. | 5- 13 | 8 5/8 | + 3/8 | +4.5 |
| N | FOXBORO | 23- 42 | 30 3/4 | + 3/4 | +2.5 |
| O | GENERAL AUTOMATION | 6- 14 | 6 7/8 | -1 1/4 | -15.3 |
| O | GRI COMPUTER CORP | 1- 1 | 5/8 | + 1/8 | +25.0 |
| N | HEWLETT-PACKARD CO | 58-120 | 92 1/2 | -6 5/8 | -6.6 |
| N | HONEYWELL INC | 22- 43 | 28 1/8 | +1 1/4 | +4.6 |
| N | IBM | 159-224 | 181 | +4 1/2 | +2.5 |
| O | MEMOREX | 1- 10 | 7 | - 5/8 | -8.1 |
| O | MICRODATA CORP | 2- 6 | 4 5/8 | + 1/8 | +2.7 |
| O | MODULAR COMPUTER SYS | 5- 19 | 10 1/2 | -1 1/2 | -12.5 |
| N | NCR | 15- 39 | 24 7/8 | +1 1/2 | +5.9 |
| O | PRIME COMPUTER INC | 2- 6 | 5 | 0 | 0.0 |
| | | | | | |
| N | PERKIN-ELMER | 16- 30 | 23 1/2 | +1 3/8 | +6.2 |
| N | RAYTHEON CO | 26- 59 | 49 3/4 | +2 1/8 | +4.4 |
| N | SINGER COMPANY | 10- 17 | 12 1/4 | + 7/8 | +7.6 |
| N | SPERRY RAND | 26- 49 | 40 1/4 | + 1/2 | +1.2 |
| A | SYSTEMS ENG. LABS | 1- 5 | 3 1/8 | 0 | 0.0 |
| O | ULTIMACC SYSTEMS INC | 1- 6 | 5 5/8 | 0 | 0.0 |
| N | VARIAN ASSOCIATES | 7- 19 | 13 3/8 | + 7/8 | +7.0 |
| N | WANG LABS. | 7- 17 | 11 3/4 | + 1/4 | +2.1 |
| N | XEROX CORP | 51- 86 | 58 | +5 | +9.4 |

### LEASING COMPANIES

| EXCH | | 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | COMDISCO INC | 1- 5 | 3 3/8 | 0 | 0.0 |
| A | COMMERCE GROUP CORP | 2- 4 | 3 | 0 | 0.0 |
| A | COMPUTER INVSTRS GRP | 1- 2 | 3/4 | 0 | 0.0 |
| M | DATRONIC RENTAL | 1- 1 | 1/2 | 0 | 0.0 |
| A | DCL INC | 1- 1 | 1/2 | 0 | 0.0 |
| N | DPF INC | 3- 6 | 4 1/2 | - 1/8 | -2.7 |
| O | EDP RESOURCES | 1- 2 | 1 | 0 | 0.0 |
| A | GRANITE MGT | 1- 5 | 3 1/2 | + 1/4 | +7.6 |
| A | GREYHOUND COMPUTER | 2- 3 | 2 7/8 | 0 | 0.0 |
| A | ITEL | 3- 9 | 5 7/8 | + 1/8 | +2.1 |
| N | LEASCO CORP | 4- 9 | 6 | - 1/8 | -2.0 |
| O | LEASPAC CORP | 1- 1 | 1/4 | 0 | 0.0 |
| O | LECTRO MGT INC | 1- 1 | 1/8 | 0 | 0.0 |
| O | NRG INC | 1- 4 | 2 3/8 | - 3/8 | -13.6 |
| A | PIONEER TEX CORP | 2- 7 | 5 | - 1/4 | -4.7 |
| A | ROCKWOOD COMPUTER | 1- 1 | 1/4 | - 3/8 | -60.0 |
| N | U.S. LEASING | 8- 14 | 8 7/8 | + 5/8 | +7.5 |

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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### SOFTWARE & EDP SERVICES

| EXCH | | 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | ADVANCED COMP TECH | 1- 1 | 1 | 0 | 0.0 |
| A | APPLIED DATA RES. | 1- 13 | 1 3/4 | 0 | 0.0 |
| N | AUTOMATIC DATA PROC | 29- 65 | 51 5/8 | +1 5/8 | +3.2 |
| O | BRANDON APPLIED SYST | 1- 1 | 1/4 | 0 | 0.0 |
| O | CENTRAL DATA SYSTEMS | 3- 7 | 6 1/2 | 0 | 0.0 |
| O | COMPUTER DIMENSIONS | 2- 6 | 4 | - 1/4 | -5.8 |
| O | COMP ELECTION SYSTMS | 3- 6 | 5 1/4 | 0 | 0.0 |
| O | COMPUTER HORIZONS | 1- 1 | 3/4 | - 1/8 | -14.2 |
| O | COMPUTER NETWORK | 1- 3 | 2 3/8 | 0 | 0.0 |
| N | COMPUTER SCIENCES | 2- 6 | 4 1/2 | + 3/8 | +9.0 |
| O | COMPUTER TASK GROUP | 1- 1 | 5/8 | 0 | 0.0 |
| O | COMPUTER USAGE | 2- 4 | 2 3/8 | + 1/8 | +5.5 |
| O | COMSHARE | 3- 4 | 2 3/4 | - 1/8 | -4.3 |
| O | DATATAB | 1- 2 | 1 3/4 | 0 | 0.0 |
| A | ELECT COMP PROG | 1- 1 | 1/4 | 0 | 0.0 |
| N | ELECTRONIC DATA SYS. | 12- 28 | 18 1/4 | + 7/8 | +5.0 |
| O | INFONATIONAL INC | 1- 1 | 1/8 | 0 | 0.0 |
| O | IPS COMPUTER MARKET. | 1- 1 | 3/4 | 0 | 0.0 |
| O | KEANE ASSOCIATES | 2- 3 | 2 1/4 | 0 | 0.0 |
| O | KEYDATA CORP | 2- 3 | 2 1/2 | - 1/8 | -4.7 |
| | | | | | |
| O | LOGICON | 3- 5 | 3 5/8 | 0 | 0.0 |
| A | MANAGEMENT DATA | 1- 3 | 1 3/4 | - 3/8 | -17.6 |
| O | NATIONAL CSS INC | 6- 14 | 12 | +1 3/4 | +17.0 |
| O | NATIONAL COMPUTER CO | 1- 1 | 1/8 | 0 | 0.0 |
| A | ON LINE SYSTEMS INC | 9- 17 | 13 1/4 | + 1/2 | +3.9 |
| N | PLANNING RESEARCH | 2- 6 | 3 7/8 | 0 | 0.0 |
| O | PROGRAMMING & SYS | 1- 1 | 5/8 | 0 | 0.0 |
| O | RAPIDATA INC | 2- 5 | 3 5/8 | + 1/8 | +3.5 |
| O | REYNOLDS & REYNOLD | 10- 24 | 11 | -1 | -8.3 |
| O | SCIENTIFIC COMPUTERS | 1- 1 | 1 | 0 | 0.0 |
| O | SIMPLICITY COMPUTER | 1- 1 | 3/4 | 0 | 0.0 |
| O | TYMSHARE INC | 7- 21 | 16 3/8 | +1 3/8 | +9.1 |
| A | UPS SYSTEMS | 2- 4 | 3 | - 1/2 | -14.2 |
| N | WYLY CORP | 2- 4 | 3 | 0 | 0.0 |

### PERIPHERALS & SUBSYSTEMS

| EXCH | | 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| N | ADDRESSOGRAPH-MULT | 4- 9 | 6 1/2 | + 7/8 | +15.5 |
| O | ADVANCED MEMORY SYS | 1- 7 | 4 | + 5/8 | +18.5 |
| N | AMPEX CORP | 3- 7 | 5 1/8 | + 3/8 | +7.8 |
| O | ANDERSON JACOBSON | 1- 3 | 1 7/8 | - 1/2 | -21.0 |
| O | BEEHIVE MEDICAL ELEC | 1- 5 | 3 | - 1/8 | -4.0 |
| A | BOLT,BERANEK & NEW | 5- 13 | 10 | + 7/8 | +9.5 |
| N | BUNKER-RAMO | 4- 8 | 4 5/8 | 0 | 0.0 |
| A | CALCOMP | 4- 7 | 4 | - 1/4 | -5.8 |
| O | CAMBRIDGE MEMORIES | 3- 5 | 3 3/4 | - 1/8 | -3.2 |
| N | CENTRONICS DATA COMP | 7- 25 | 15 1/4 | - 3/4 | -4.6 |
| O | CODEX CORP | 15- 38 | 29 1/4 | +2 3/4 | +10.3 |
| O | COGNITRONICS | 1- 2 | 1 1/8 | 0 | 0.0 |
| O | COMPUTER COMMUN. | 1- 2 | 1 | 0 | 0.0 |
| O | COMPUTER CONSOLES | 3- 7 | 4 1/4 | -1 1/4 | -22.7 |
| A | COMPUTER EQUIPMENT | 1- 2 | 1 3/4 | + 1/4 | +16.6 |
| O | COMPUTER MACHINERY | 1- 2 | 1 3/4 | + 1/8 | +7.6 |
| O | COMPUTER TRANSCEIVER | 1- 2 | 1 1/8 | 0 | 0.0 |
| O | CONTEN | 2- 5 | 3 1/2 | - 1/4 | -6.6 |
| N | CONRAC CORP | 12- 23 | 15 1/8 | -1 3/4 | -13.3 |
| O | DATA ACCESS SYSTEMS | 1- 3 | 2 | 0 | 0.0 |
| O | DATA 100 | 5- 16 | 9 3/8 | + 1/4 | +2.7 |
| A | DATA PRODUCTS CORP | 2- 6 | 3 5/8 | + 1/8 | +3.5 |
| O | DATA TECHNOLOGY | 1- 3 | 1 3/4 | 0 | 0.0 |
| O | DATUM INC | 1- 2 | 1 3/8 | - 1/8 | -8.3 |
| O | DECISION DATA COMPUT | 4- 7 | 4 3/4 | + 1/2 | +11.7 |
| O | DELTA DATA SYSTEMS | 1- 1 | 1/4 | 0 | 0.0 |
| O | DIVAN CONTROLS | 1- 1 | 3/4 | 0 | 0.0 |
| N | ELECTRONIC M & M | 1- 3 | 1 3/4 | + 1/8 | +7.6 |
| O | FABRI-TEK | 1- 1 | 1 | 0 | 0.0 |
| O | GENERAL COMPUTER SYS | 1- 2 | 1 1/4 | 0 | 0.0 |
| N | HAZELTINE CORP | 3- 6 | 4 | - 1/4 | -5.8 |
| | | | | | |
| N | HARRIS CORP | 18- 29 | 23 | +1 | +4.5 |
| A | INCOTERM CORP | 3- 12 | 9 7/8 | - 1/4 | -2.6 |
| O | INFOREX INC | 2- 5 | 2 7/8 | 0 | 0.0 |
| O | INFORMATION INTL INC | 8- 14 | 11 3/4 | - 3/8 | -3.0 |
| A | LUNDY ELECTRONICS | 3- 3 | 2 7/8 | 0 | 0.0 |
| O | MANAGEMENT ASSIST | 1- 1 | 5/8 | 0 | 0.0 |
| A | MILGO ELECTRONICS | 8- 24 | 15 5/8 | + 1/8 | +0.8 |
| N | MOHAWK DATA SCI | 1- 5 | 2 7/8 | + 3/8 | +15.0 |
| O | OPTICAL SCANNING | 1- 3 | 3 | 0 | 0.0 |
| O | PENRIL CORP | 2- 2 | 1 1/2 | - 1/8 | -7.6 |
| O | PERTEC CORP | 2- 8 | 4 3/4 | -1 | -17.3 |
| A | POTTER INSTRUMENT | 2- 2 | 1 3/4 | 0 | 0.0 |
| O | PRECISION INST. | 1- 1 | 3/4 | 0 | 0.0 |
| O | QUANTOR CORP | 2- 6 | 4 5/8 | + 1/8 | +2.7 |
| O | RECOGNITION EQUIP | 2- 9 | 6 1/8 | + 1/8 | +2.0 |
| N | SANDERS ASSOCIATES | 3- 11 | 6 7/8 | + 3/4 | +12.2 |
| O | SCAN DATA | 1- 3 | 1 3/4 | - 1/8 | -6.6 |
| O | STORAGE TECHNOLOGY | 6- 17 | 12 1/4 | +1 | +8.9 |
| O | SYCOR INC | 5- 15 | 13 3/4 | +1 1/2 | +12.2 |
| O | T BAR INC | 3- 6 | 5 3/8 | + 1/8 | +2.3 |
| | | | | | |
| O | TALLY CORP. | 1- 5 | 3 1/8 | 0 | 0.0 |
| O | TEC INC | 1- 4 | 3 | 0 | 0.0 |
| N | TEKTRONIX INC | 19- 41 | 32 | -1 1/4 | -3.7 |
| N | TELEX | 1- 3 | 2 1/8 | - 1/8 | -5.5 |
| O | WANGCO INC | 4- 9 | 5 7/8 | + 1/8 | +2.1 |
| O | WILTEK INC | 1- 4 | 2 1/2 | 0 | 0.0 |

### SUPPLIES & ACCESSORIES

| EXCH | | 1975 RANGE (1) | CLOSE AUG 27 1975 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|
| O | BALTIMORE BUS FORMS | 4- 5 | 4 1/2 | + 1/4 | +5.8 |
| A | BARRY WRIGHT | 5- 7 | 6 1/4 | - 1/4 | -3.8 |
| O | CYBERMATICS INC | 1- 1 | 1/2 | 0 | 0.0 |
| A | DATA DOCUMENTS | 29- 42 | 34 | +2 1/8 | +6.6 |
| O | DUPLEX PRODUCTS INC | 12- 25 | 16 | +1 1/8 | +7.5 |
| N | ENNIS BUS. FORMS | 5- 7 | 5 1/8 | - 1/8 | -2.3 |
| O | GRAHAM MAGNETICS | 5- 13 | 8 1/4 | +1 | +13.7 |
| O | GRAPHIC CONTROLS | 8- 21 | 11 1/2 | +1 | +9.5 |
| N | 3M COMPANY | 43- 68 | 53 3/4 | +2 1/4 | +4.5 |
| O | MOORE CORP LTD | 39- 51 | 43 3/4 | +1 1/2 | +3.5 |
| N | NASHUA CORP | 11- 22 | 12 1/4 | + 5/8 | +5.3 |
| O | STANDARD REGISTER | 11- 20 | 15 3/4 | + 1/4 | +1.6 |
| O | TAB PRODUCTS CO | 4- 8 | 5 3/4 | 0 | 0.0 |
| N | UARCO | 17- 24 | 19 3/4 | - 1/4 | -1.2 |
| O | VANIER GRAPHICS CORP | 4- 7 | 4 3/4 | 0 | 0.0 |
| A | WABASH MAGNETICS | 3- 5 | 4 | + 1/8 | +3.2 |
| N | WALLACE BUS FORMS | 15- 25 | 18 1/8 | - 1/4 | -1.3 |

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